Economic Analysis: Water Supply

I. Introduction

This attachment provides an overview of the water supply costs and benefits of the Proposal for the Greater Los Angeles County Region (Region) and identifies the water supply costs and benefits of each individual project. Because several projects would provide multiple benefits, Table 7-1 below contains a summary of the costs and benefits for all projects.

This attachment contains a narrative description of the expected water supply benefits of each project. Where possible, each benefit was quantified and presented in physical or economic terms. In cases where quantitative analyses were not feasible, this attachment provides complimentary qualitative analyses. In addition, this attachment provides a description of economic factors that may affect or qualify the amount of economic benefits to be realized. This attachment also includes a discussion regarding uncertainties about the future that might affect the level of benefit received.

This attachment also contains a narrative description of the expected costs that may be incurred to implement and operate the Proposal, and to achieve benefits from each project.

Table 7.1: Proposal Project Costs and Benefits Summary

Project	Agency	Total Present Value Project Costs	Total Present Value Project Benefits				Benefit/ Cost Ratio
			Water Supply	Flood Damage Reduction	Water Quality & Other	Total	
(a)	(b)	(c)	(d)	(e)	(f)	(g) (d) + (e) + (f)	(h) f/(c)
Hahamongna Basin Multi-Use Project	Arroyo Seco Foundation	$7,340,486	$50,567,382	$0	$689,771	$51,257,154	6.98
Citywide Smart Irrigation Control System and Recycled Water Improvements	City of Calabasas	$849,234	$612,985	$0	$1,214,757	$1,827,741	2.15
Storm Drain Improvements and Installation of Infiltration Chambers on Hawthorne Blvd	City of Hawthorne	$10,603,033	$0	$0	$0	$0	0
Penmar Water Quality Improvement and Runoff Reuse Project	City of Los Angeles, Bureau of Sanitation	$27,269,735	$1,764,283	$0	$0	$1,764,283	0.06

Economic Analysis: Water Supply

Project	Agency	Total Present Value Project Costs	Total Present Value Project Benefits				Benefit/ Cost Ratio
			Water Supply	Flood Damage Reduction	Water Quality & Other	Total	
(a)	(b)	(c)	(d)	(e)	(f)	(g) (d) + (e) + (f)	(h) f/(c)
Model Equestrian Center	City of Rolling Hills	$6,470,364	$12,574	$0	$363,881	$376,454	0.06
16th Street Watershed Runoff	City of Santa Monica	$1,890,356	$68,612	$0	$0	$68,612	0.04
Covina Irrigating Co. Surface Water Treatment Plant Improvements	Covina Irrigating Company	$1,918,312	$68,612	$0	$0	$68,612	0.04
Central Los Angeles County - Regional Water Recycling Program	Los Angeles Department of Water and Power (LADWP)	$10,660,636	$172,150,784	$0	$0	$172,150,784	16.15
Tujunga Spreading Grounds Enhancements	Three Valleys Municipal Water District	$11,383,796	$4,231,326	$0	$0	$4,231,326	0.37
San Antonio Spreading Grounds Improvements	Three Valleys MWD	$4,279,286	$36,937,911	$0	$0	$36,937,911	8.63
Leo J. Vander Lans Advanced Water Treatment Plant Expansion	Water Replenishment District of Southern California	$54,232,760	$45,285,312	$0	$0	$45,285,312	0.84
Whittier Narrows Conservation Pool Project	Water Replenishment District of Southern California	$4,406,336	$7,781,351	$0	$0	$7,781,351	1.8
Water and Energy Efficiency in the School and Hotel/Motel Sectors	West Basin Municipal Water District	$475,660	$1,028,177	$0	$1,713,048	$2,741,224	5.76
TOTAL		**$164,829,606**	**$399,212,426**	**$0**	**$3,981,457**	**$403,193,881**	**2.45**

Additional water supplies may be produced locally within the Metropolitan Water District of Southern California (MWD) service area through conservation, recycling, groundwater recharge, groundwater extraction, and other sources will reduce the demand for imported water by the Los Angeles Region. MWD member agencies will substitute locally produced

water supplies for imported water from MWD, assuming the locally produced water is less expensive than imported water. The value of adding new local supplies to satisfy local demand in place of imported water can thus be estimated based on the avoided cost of purchasing imported water.

The cost savings arising from reducing demands for imported water should be estimated based on the projected future cost of imports, at the margin. This in turn requires a projection of the cost of providing additional imported water at the levels needed in the future if local resources are not enhanced in conjunction with this Proposal. The key empirical question for valuation is thus, "What is the future cost, at the margin, of acquiring another acre-foot (AF) of imported water, and having it delivered (and treated, where applicable) to the users of the local supply alternatives?"[1]

There are several empirical and conceptual challenges to forecasting the future avoided cost of import water. This Attachment discusses these issues and how they were addressed to develop the avoided water supply costs that are used to evaluate the benefits of those projects that provide local water (or conserve water) in the Los Angeles region.

Table 7.2 compares Tier 1 water rate projections published by MWD for 2005-2009 with actual water rates to illustrate differences in forecasted and actual water rates. As Table 7.2 shows, the margin of error associated with the forecast increases with period of time for which rates are forecast. This analysis requires MWD water rates be forecast through 2060 to match the length of time over which benefits of reduced demand for imported water accrue.

Table 7.2: Comparison of Projected and Actual MWD Tier 1 Water Rates

Year	Projected		Actual		Difference[a]	
	Untreated	Treated	Untreated	Treated	Untreated	Treated
2005	$331	$443	$331	$443	0.0%	0.0%
2006	$335	$460	$331	$453	-1.2%	-1.5%
2007	$345	$476	$331	$478	-3.9%	0.4%
2008	$361	$497	$351	$508	-2.6%	2.3%
2009	$379	$523	$436	$620	15.0%	18.7%

Notes: *All dollar values are nominal. Projected Tier 1 MWD water rates are sourced from the 2004/05 Long Range Finance Plan, whereas actual MWD Tier 1 water rates are sourced from the MWD "Water Rates and Charges". Projected MWD Tier 1 water rates are computed as the midpoint of the low and high projected rates.*

[1] Cost of treatment and delivery need to be included in the avoided import water costs, to provide a suitable "apples-to-apples" comparison of import water costs to the local supplies. This is because the costs used in these analyses for local supplies are generally inclusive of treatment and delivery.

Economic Analysis: Water Supply

[a] *(Actual - Projected) ÷ Projected*

Sources: *Metropolitan Water District of Southern California, 2004, "2004/2005 Long Range Finance Plan", Available at: http://www.mwdh2o.com/mwdh2o/pages/finance/Finance_Plan.pdf.*

Metropolitan Water District of Southern California Website, "Water Rates and Charges", Available at: http://www.mwdh2o.com/mwdh2o/pages/finance/finance_02.html

Table 7.3 reports the projected real MWD full service Tier 1 and untreated replenishment water rates used to measure the avoided cost of imported water purchase in this analysis. Annual year-over-year percentage changes in the real water rates are also reported in the final three columns of Table 7.2.

Table 7.3: Projected MWD Real Treated and Untreated Water Rates, 2009-2019

	Projected Real MWD Water Rates ($/AF)*			***% Change in Projected Real MWD Water Rates***		
	Tier 1		**Replenishment**	**Tier 1**		**Replenishment**
Year	**Treated**	**Untreated**	**Untreated**	**Treated**	**Untreated**	**Untreated**
2009	$620	$436	$318			
2010	$690	$476	$360	11.29%	9.17%	13.21%
2011	$726	$513	$399	5.22%	7.77%	10.83%
2012	$760	$537	$423	4.68%	4.68%	6.02%
2013	$793	$560	$442	4.34%	4.28%	4.49%
2014	$826	$583	$460	4.16%	4.11%	4.07%
2015	$856	$604	$477	3.63%	3.60%	3.70%
2016	$887	$626	$494	3.62%	3.64%	3.56%
2017	$919	$649	$512	3.61%	3.67%	3.64%
2018	$952	$672	$530	3.59%	3.54%	3.52%
2019	$987	$697	$550	3.68%	3.72%	3.77%

Table 7.3: Projected MWD Real Treated and Untreated Water Rates, 2009-2019

Year	*Projected Real MWD Water Rates ($/AF)**			*% Change in Projected Real MWD Water Rates*		
	Tier 1		Replenishment	Tier 1		Replenishment
	Treated	Untreated	Untreated	Treated	Untreated	Untreated

Sources:

Metropolitan Water District of Southern California Website, "Water Rates and Charges", Available at: http://www.mwdh2o.com/mwdh2o/pages/finance/finance_02.html. Metropolitan Water District of Southern California, 2004, "2004/2005 Long Range Finance Plan", Available at: http://www.mwdh2o.com/mwdh2o/pages/finance/Finance_Plan.pdf.

U.S. Bureau of Labor Statistics, "Consumer Price Index – CPI Databases", Available at: http://www.bls.gov/cpi/#data.

Metropolitan Water District of Southern California, 2010, "Proposed Budget 2010/11 and 2011/12", Business & Finance Committee, (May 10, 2010), Available at http://edmsidm.mwdh2o.com/idmweb/cache/MWD%20EDMS/003707537-1.pdf. [Accessed December 2010]

Congressional Budget Office Economic Outlook (August 2010), Table 2.1, Available at: http://www.cbo.gov/ftpdocs/117xx/doc11705/08-18-Update.pdf.

***All prices are reported in constant 2009 dollars.*

Detailed information and background regarding the qualitative and quantitative costs and water supply benefits of each individual project follows.

II. Hahamongna Basin Multi-Use Project

Water Supply Benefits

This project will result in water supply benefits associated with avoided imported water supply purchases and improved water supply reliability (summarized in Table 7.4). The magnitude of benefits, monetized when possible, is reported in Table 7.8. Detailed cost and benefit information associated with the project, including present value calculations, is presented in the attached tables.

Table 7.4: Benefits Summary

Type of Benefit	Assessment Level	Beneficiaries
Avoided water imports due to increased groundwater storage (Basin component)	Monetized	Local / Regional / Statewide
Avoided water imports due to increased water supplies (Canyon component)	Monetized	Local / Regional / Statewide
Improved water supply reliability	Qualitative	Local and Regional

Economic Analysis: Water Supply

Avoided Water Supply Purchases

This Project is expected to generate water savings through avoided purchase of imported water supply due to increased storage behind Devil's Gate Dam and increased water supplies due to the new diversion rubber dam that will direct flows from the Arroyo Seco into the existing spreading grounds. The avoided water supply purchases result from improvements to the Hahamongna Basin (Basin Component) and the Arroyo Seco Canyon (Canyon Component).

The avoided water purchase costs of water conserved in both the Basin and Canyon components has a present value benefit in 2009 dollars of approximately $50,567,382 assuming a 6% discount rate over the life of the Project.

Basin Component

The Basin component will increase groundwater supply and storage by removing layers of fine particle sediment down to the pre-dam elevation. This will allow adequate percolation for groundwater recharge during and between storm events. Under existing conditions, the capacity of the Hahamongna basin is 1,280 AF. This component of the Project includes excavation of an additional 155 AF, thereby increasing retention capacity to 1,435 AF.

In an average rainfall year, the Arroyo Seco watershed is estimated to produce runoff that will fill the Hahamongna Basin three times for a total of 4,300 AFY (3 x 1,435 AF). The underlying aquifer, the Raymond Basin, can store all of the stormwater captured by the Hahamongna Basin, thereby increasing local water supplies by the estimated amount of stormwater retention (4,300 AFY).

In recent years, Raymond Basin pumpers have had their pumping allotment reduced due to an observed drawdown of groundwater levels. With the implementation of this Project, and the eventual stabilization of groundwater levels, the pumping rights can be restored. If the Raymond Basin Management Board allows water agencies to pump, the value of this water will be the value of avoided alternative supplies (i.e. imports).

The avoided water purchase costs of untreated water conserved has a present value benefit in 2009 dollars of approximately $42,339,804 assuming a 6% discount rate over the 50-year life of the Project.

Canyon Component

Economic Analysis: Water Supply

The Canyon component of the Project will increase surface water diversions which would be pumped to the Monk Hill subarea for distribution. Under existing conditions, the diverted Canyon water totals approximately 2,775 AFY and piping infrastructure, with a capacity of 35 cubic feet per second (cfs), cannot transfer water at its full capacity. With implementation of the Project, water can be diverted at the full 35 cfs rate, increasing the total amount of water diverted by 875 AFY. By increasing the total amount of water supplies available, dependence on imported water will be reduced. For purposes of this analysis, any increase in pumping costs is assumed to be included as part of the O&M costs for the Project; therefore, the full value of imported water was used to monetize this water supply benefit. The avoided water purchase costs of untreated water conserved has a present value benefit in 2009 dollars of approximately $8,227,578 assuming a 6% discount rate over the life of the Project.

Improved Water Supply Reliability

The reliability of a water supply refers to the ability to meet water demands on a consistent basis, even in times of drought or other constraints on source water availability. This Project provides for local water conservation and reduces imported water demand by increasing stormwater infiltration into the groundwater basin.

Although interest in water supply reliability is increasing, only a few studies have directly attempted to quantify its value. These studies indicate that residential and industrial (i.e., urban) customers seem to value supply reliability quite highly. Stated preference studies concluded that the annual value of water reliability ranged from $93 to $489 per household (updated to 2009 dollars) for total reliability (i.e., a 0% probability of their water supply being interrupted in times of drought).

The challenge of using such information to determine the value of the Project is interpreting the survey-based household monetary values. The values noted above reflect a willingness-to-pay to ensure complete reliability (zero drought-related use restrictions in the future), whereas these integrated projects enhance only overall reliability, but do not guarantee 100% reliability. Thus, the dollar values from the studies will probably overstate the reliability value provided by the Project. One simple way to roughly adjust for this “whole versus part” problem is to attribute a portion of the total value of reliability to the portion of the project that is solved by the project.

Distribution of Project Benefits and Identification of Beneficiaries

This Project will reduce the water supply costs to local agencies, which will result in lower water rates paid by local users (Table 7.5). The Project will also increase supplies available to MWD

users and mitigate the declining conditions of the Bay-Delta Ecosystem through reduced water exports.

Table 7.5: Project Beneficiaries Summary

Local	Regional	Statewide
Local Water Purveyors and Their Customers	MWD Customers	Bay-Delta Ecosystem

Project Benefits Timeline Description

The Basin component of the Project will provide water supply benefits beginning in 2013 through the Project lifetime (2060). The Canyon component of the Project will provide water supply benefits beginning in 2014 through the Project lifetime (2060).

Uncertainty of Benefits

The projected savings of this Project represent best estimates based on the latest available data (Table 7.6). Actual water savings will vary.

Table 7.6: Omissions, Biases, and Uncertainties and their Effect on the Project

Benefit or cost category	Likely impact on net benefits*	Comment
Avoided Imported Water Cost		
• Water rate forecast (MWD)	+/-	Margin of error implicit in forecasting
• Climate	+	The projections also are driven by "normal year" expectations, whereas dry year conditions will add additional cost pressures (and may move some of the imported water to higher cost Tier 2 levels).
• Regulatory/legal	+	Regulatory/ legal issues combine to make it more likely than not that the future availability of MWD-provided imported waters will be increasingly constrained, and that costs will escalate at rates higher than experienced in the recent past.

• Increased water demands	+	Other SWP users may increase their demand which may result in higher rates (holding supply constant)
Water Supply Reliability	+	The monetized value of added reliability is not included in the benefit-cost comparison. If we had added the present value benefit of improved water supply reliability in the overall benefit-cost analysis, it would increase net benefits.

* *Direction and magnitude of effects on net benefits*
+ Likely to increase net benefits relative to quantified estimates
++ Likely to increase net benefits significantly
- Likely to decrease net benefits
-- Likely to decrease net benefits significantly
+/- Uncertain

The "Without Project" Baseline

If this Project is not implemented, stormwater retention will remain at 1,280 AF. The amount of surface water diversions will not increase by an additional 875 AFY and imported potable water will continue to be purchased. .

Potential Adverse Effects from the Project

Any potential short-term impacts associated with Project construction will be mitigated. No long-term adverse effects are expected as a result of the proposed Project.

Project Costs

The total estimated cost for the Project is $7,264,739. When operations and maintenance costs through 2060 are considered, the present value in 2009 dollars is $7,340,486. Capital and maintenance costs will be expended in 2011 and 2012, with the largest capital cost in construction and implementation. The operation and maintenance costs are estimated to be $24,000 in 2013. Detailed cost information associated with the Project, including present value calculations is presented in Appendix 7.A.

Table 7.7: Project Budget

		(a)	(b)	(c)	(d)	(e)
Budget Category		**Non-State Share* (Funding Match)**	**Requested Grant Funding**	**Other State Funds Being Used**	**Total**	**% Funding Match**
(a)	Direct Project Administration Costs	$120,895	$22,919	$30,657	$174,471	69%

(b)	Land Purchase/Easement	$0	$0	$0	$0	0%
(c)	Planning/Design/Engineering/ Environmental Documentation	$945,253	$229,424	$227,660	$1,402,337	67%
(d)	Construction/Implementation	$144,149	$3,142,031	$930,934	$4,217,114	3%
(e)	Environmental Compliance/ Mitigation/Enhancement	$0	$398,917	$105,427	$504,344	0%
(f)	Construction Administration	$22,853	$235,870	$67,750	$326,473	7%
(g)	Other Costs (Including Legal Costs, Permitting and Licenses)	$136,996	$100,000	$3,004	$240,000	57%
(h)	Construction/Implementation Contingency	$109,230	$212,120	$78,650	$400,000	27%
(i)	**Grand Total** (Sum rows (a) through (h) for each column)	**$1,479,376**	**$4,341,281**	**$1,444,082**	**$7,264,739**	**20%**
**Sources of funding:* *Non-State Funds: Arroyo Seco Foundation; Pasadena Water & Power Dept.; Pasadena Public Works Dept.; LA County 1992 & 1996 Prop A* *State Funds: Prop. 50 River Parkways; Prop 12 Riparian Habitat Fund; Youth Recreation Development Program*						

Project Benefit Costs Comparison

The total present value of the costs for the Project, along with monetized and qualitative benefits, is provided in Table 7.8.

Table 7.8: Benefit-Cost Analysis Overview

	Present Value (in 2009 dollars)
Costs – Total Capital and O&M	$7,340,486
Monetizable Benefits	
Water Supply Benefits	$50,567,382
Power Benefits	$689,771
Total Benefits	**$51,257,154**
Qualitative Benefits	**Qualitative Indicator****
Improved water supply reliability	+
Trash and sediment reduction	+
Ecosystem restoration	+
Recreation	+
Reduced Local and Regional Flooding	+
** *Magnitude of effect on net benefits* *+/- (negligible or unknown)* *+ (moderate)* *++ (significant)*	

Economic Analysis: Water Supply

Methods used to Estimate With- and Without-Project Conditions

The annual cost of implementation of the Project is provided in Table 7.A.1 of Appendix 7.A. For this analysis, the following assumptions were made:

(1) Replacement cost of trail and other amenities are included in the maintenance costs; and

(2) Fish & Game and other renewable permit costs were included in the maintenance costs for the Canyon component.

The annual water supply benefits of implementing the Project are provided in Table 7.A.2 of Appendix 7.A. For this analysis, the following assumptions were made:

(1) Pooling of water in the Basin is not currently possible due to inundation of Southern California Edison power poles, therefore there would be no benefit without this Project;

(2) If the Raymond Basin Management Board allowed water agencies to pump, the value of this water would be $2.5 million dollars per year;

(3) The 4,300 acre feet per year benefit is based on an average rainfall year; and

(4) The Canyon component will increase water diversion capacity and result in an increase in available groundwater supplies from 2,775 AFY to 3,650 AFY, and reducing water imports.

The annual costs of avoided projects are provided in Table 7.A.3 of Appendix 7.A. There are no annual costs of avoided projects.

The annual other water supply benefits of the Project are provided in Table 7.A.4 of Appendix 7.A. There are no annual other water supply benefits associated with implementation of this Project.

The total water supply benefits for the Project are provided in Table 7.A.5 of Appendix 7.A. These benefits are provided through avoided potable water purchases and have a present value of $50,567,382.

III. Citywide Smart Irrigation Control System and Recycled Water Improvements

Water Supply Benefits

This Project will result in water supply benefits associated with avoided water supply purchases and improved water supply reliability (Table 7.9). The magnitude of benefits, monetized when possible, is reported in Table 7.13 Detailed cost and benefit information associated with the Project, including present value calculations, is presented in Appendix 7.B.

Table 7.9: Benefits Summary

Type of Benefit	Assessment Level	Beneficiaries
Avoided water supply purchases	Monetized	Local / Regional / Statewide
Improved water supply reliability	Qualitative	Local and Regional

Avoided Water Supply Purchases

This Project is expected to generate water savings through avoided purchase of imported water supply. The cost of water for city-owned properties for the FY 09-10 was $144,345. Water savings from implementing a smart irrigation control system is estimated to be between 25% and 30% of FY 09-10 usage. Therefore, the water savings will be approximately $40,000/year. Based on the Las Virgenes Municipal Water District's (LVMWD's) water rate of $700/acre foot (AF), the water savings will be 57 AF/year. Therefore, the avoided water purchase costs of water conserved over the 50-year life of the Project has a present value benefit in 2009 dollars of approximately $849,274 assuming a 6% discount rate.

Improved Water Supply Reliability

The reliability of a water supply refers to the ability to meet water demands on a consistent basis, even in times of drought or other constraints on source water availability. This Project provides for imported water conservation and reduces imported water demand.

Although interest in water supply reliability is increasing, only a few studies have directly attempted to quantify its value. These studies indicate that residential and industrial (i.e., urban) customers seem to value supply reliability quite highly. Stated preference studies concluded that the annual value of water reliability ranged from $93 to $489 per household

(updated to 2009 dollars) for total reliability (i.e., a 0% probability of their water supply being interrupted in times of drought).

The challenge of using such information to determine the value of the Project is interpreting the survey-based household monetary values. The values noted above reflect a willingness-to-pay to ensure complete reliability (zero drought-related use restrictions in the future), whereas these integrated projects enhance only overall reliability, but do not guarantee 100% reliability. Thus, the dollar values from the studies will probably overstate the reliability value provided by the Project. One simple way to roughly adjust for this "whole versus part" problem is to attribute a portion of the total value of reliability to the portion of the project that is solved by the project.

Distribution of Project Benefits and Identification of Beneficiaries

The following table summarizes the Project's beneficiaries. This Project will lower water supply costs through water conservation that may be passed on to local ratepayers. The Project will also increase supplies available to Metropolitan Water District of Southern California (MWD) customers and mitigate declining conditions of the Bay-Delta Ecosystem through reduced water exports.

Table 7.10: Project Beneficiaries Summary

Local	Regional	Statewide
Local ratepayers	MWD customers	Bay-Delta Ecosystem

Project Benefits Timeline Description

This Project would provide water supply benefits beyond the 50-year Project lifetime (2011-2060).

Uncertainty of Benefits

Projected savings through the installation of smart irrigation controllers represent best estimates based on the latest available data. Actual water savings will vary.

Table 7.11: Omissions, Biases, and Uncertainties and their Effect on the Project

Benefit or cost category	Likely impact on net benefits*	Comment
Avoided Imported Water Cost		
• Water rate forecast	+/-	Margin of error implicit in forecasting

Economic Analysis: Water Supply

Benefit or cost category	Likely impact on net benefits*	Comment
(MWD) • Climate	+	The projections also are driven by "normal year" expectations, whereas dry year conditions will add additional cost pressures (and may move some of the imported water to higher cost Tier 2 levels).
• Regulatory/legal	+	Regulatory/ legal issues combine to make it more likely than not that the future availability of MWD-provided imported waters will be increasingly constrained, and that costs will escalate at rates higher than experienced in the recent past.
• Increased water demands	+	Other MWD users may increase their demand which may result in higher rates (holding supply constant)
Water Supply Reliability	+	The monetized value of added reliability is not included in the benefit-cost comparison. If we had added the present value benefit of improved water supply reliability in the overall benefit-cost analysis, it would increase net benefits.

* *Direction and magnitude of effects on net benefits*
- *+ Likely to increase net benefits relative to quantified estimates*
- *++ Likely to increase net benefits significantly*
- *- Likely to decrease net benefits*
- *-- Likely to decrease net benefits significantly*
- *+/- Uncertain*

The "Without Project" Baseline

If this Project is not implemented, imported potable water will continue to be purchased for purposes for which other water sources, such as recycled or reclaimed, would suffice.

Potential Adverse Effects from the Project

Any potential short-term impacts associated with Project construction will be mitigated. No long-term adverse effects are expected as a result of the proposed Project.

Project Costs

The total estimated cost for the Project is $813,320. When operations and maintenance costs through 2060 are considered, the present value in 2009 dollars is $849,234. Capital and maintenance costs will be expended in 2011 and 2012, with the largest capital cost in

construction and implementation. The operation costs are estimated to be $9,400 in 2011. Detailed cost information associated with the Project, including present value calculations is presented in Appendix 7.B.

Table 7.12 Project Budget

		(a)	(b)	(c)	(d)	(e)
Budget Category		**Non-State Share* (Funding Match)**	**Requested Grant Funding**	**Other State Funds Being Used**	**Total**	**% Funding Match**
(a)	Direct Project Administration Costs	$40,700	$0	$0	$40,700	100%
(b)	Land Purchase/Easement	$0	$0	$0	$0	0%
(c)	Planning/Design/Engineering/ Environmental Documentation	$61,190	$0	$0	$61,190	100%
(d)	Construction/Implementation	$0	$643,874	$0	$643,874	0%
(e)	Environmental Compliance/ Mitigation/Enhancement	$0	$0	$0	$0	0%
(f)	Construction Administration	$8,500	$8,000	$0	$16,500	52%
(g)	Other Costs (Including Legal Costs, Permitting and Licenses)	$0	$0	$0	$0	0%
(h)	Construction/Implementation Contingency	$50,000	$0	$0	$50,000	100%
(i)	**Grand Total** (Sum rows (a) through (h) for each column)	**$160,390**	**$651,874**	**$0**	**$812,264**	**25%**

Note: Costs shown include those incurred in 2009 and 2010

Project Benefit Costs Comparison

The total present value of the costs for the Project and monetized and qualitative benefits are provided in Table 7.13.

Table 7.13: Benefit-Cost Analysis Overview

	Present Value (in 2009 dollars)
Costs – Total Capital and O&M	$849,234

Economic Analysis: Water Supply

	Present Value (in 2009 dollars)
Monetizable Benefits	
Water Supply Benefits	$612,985
Power Benefits	$1,214,757
Total Benefits	**$1,827,741**
Qualitative Benefits	**Qualitative Indicator****
Improved water supply reliability	+
Reduction in pollutant discharge	+
Other Benefits (Recreation)	+/-

** *Magnitude of effect on net benefits*
+/- (negligible or unknown)
+ (moderate)
++ (significant)

Methods used to Estimate With- and Without-Project Conditions

The annual cost of implementation of the Project is provided in Table 7.B.1 of Appendix 7.B. The life of the Project is estimated to be 50 years. The only foreseeable cost for operations for this Project is access to the current evapotranspiration (ET) weather data, which is done through a subscription service by the manufacturer at an estimated cost of $9,400 per year.

The annual water supply benefits of implementing the Project are provided in Table 7.B.2 of Appendix 7.B. For this analysis, MWD Tier I treated rates were used for the value of the water.

The annual costs of avoided projects are provided in Table 7.B.3 of Appendix 7.B. There are no annual costs of avoided projects associated with implementation of this Project.

The annual other water supply benefits of the Project are provided in Table 7.B.4 of Appendix 7.B. There are no annual other water supply benefits associated with implementation of this Project.

The total water supply benefits for the Project are provided in Table 7.B.5 of Appendix 7.B. These benefits are provided through avoided potable water purchases and have a present value of $612,985.

IV. Storm Drain Improvements and Installation of Infiltration Chambers

Water Supply Benefits

This Project does not have any quantifiable water supply benefits. The infiltration chamber that will be installed under medians, which are also parking areas, will consist of a gravel well and a permeable layer such as a sand layer. The infiltration chambers will store up to 1,600,000 gallons (4.9 acre-feet) of stormwater for infiltration and groundwater recharge. It is estimated that 9,000,000 gallons of stormwater per year will infiltrate and indirectly replenish the groundwater basin. This groundwater recharge will reduce the amount of stormwater discharging into the Dominguez Channel. The West Coast Groundwater Basin is an adjudicated basin without additional capacity to pump groundwater, and is unable to use additional groundwater supplies to replace water imports; therefore, the Project has no water supply benefits.

Table 7.14: Benefits Summary

Type of Benefit	Assessment Level	Beneficiaries
Not applicable	Not applicable	Not applicable

Avoided Water Supply Purchases

Not applicable.

Improved Water Supply Reliability

The reliability of a water supply refers to the ability to meet water demands on a consistent basis, even in times of drought or other constraints on source water availability. This Project provides for improved supply reliability through the infiltration of stormwater into the local groundwater basin.

Although interest in water supply reliability is increasing, only a few studies have directly attempted to quantify its value. These studies indicate that residential and industrial (i.e., urban) customers seem to value supply reliability quite highly. Stated preference studies concluded that the annual value of water reliability ranged from $93 to $489 per household (updated to 2009 dollars) for total reliability (i.e., a 0% probability of their water supply being interrupted in times of drought).

The challenge of using such information to determine the value of the Project is interpreting the survey-based household monetary values. The values noted above reflect a willingness-to-

pay to ensure complete reliability (zero drought-related use restrictions in the future), whereas these integrated projects enhance only overall reliability, but do not guarantee 100% reliability. Thus, the dollar values from the studies will probably overstate the reliability value provided by the Project. One simple way to roughly adjust for this "whole versus part" problem is to attribute a portion of the total value of reliability to the portion of the problem that is solved by the project.

Distribution of Project Benefits and Identification of Beneficiaries

Not applicable.

Table 7.15: Project Beneficiaries Summary

Local	Regional	Statewide
Not applicable	Not applicable	Not applicable

Project Benefits Timeline Description

This Project will provide water supply benefits in excess of the 50-year Project lifetime (2011-2060).

Uncertainty of Benefits

The potential for recharge of groundwater represents best estimates based on the latest available data. Actual water savings will vary.

Table 7.16: Omissions, Biases, and Uncertainties and Their Effect on the Project

Benefit or cost category	Likely impact on net benefits*	Comment
Water Supply Reliability	+	The monetized value of added reliability is not included in the benefit-cost comparison. If we had added the present value benefit of improved water supply reliability in the overall benefit-cost analysis, it would increase net benefits.

* *Direction and magnitude of effects on net benefits*
- *+ Likely to increase net benefits relative to quantified estimates*
- *++ Likely to increase net benefits significantly*
- *- Likely to decrease net benefits*
- *-- Likely to decrease net benefits significantly*
- *+/- Uncertain*

Economic Analysis: Water Supply

The "Without Project" Baseline

Not applicable.

Potential Adverse Effects from the Project

Any potential short-term impacts associated with Project construction will be mitigated. No long-term adverse effects are expected as a result of the proposed Project.

Project Costs

The total estimated cost for the Project is $6,161,360. When operations and maintenance costs through 2060 are considered, the present value in 2009 dollars is $10,603.033. Capital costs will be expended from 2009 to 2014, with the largest capital cost in construction and implementation. The operation and maintenance costs are estimated to be $65,000 in 2014 (Table 7.17). Additional operations costs in 2012 and 2013 represent additional personnel and oversight as well as startup costs. Detailed cost information associated with the Project, including present value calculations is presented in Appendix 7.C.

Table 7.17: Project Budget

		(a)	(b)	(c)	(d)	(e)
Budget Category		**Non-State Share* (Funding Match)**	**Requested Grant Funding**	**Other State Funds Being Used**	**Total**	**% Funding Match**
(a)	Direct Project Administration Costs	$100,000	$25,000	$0	$125,000	80%
(b)	Land Purchase/Easement	$0	$0	$0	$0	0%
(c)	Planning/Design/Engineering/ Environmental Documentation	$386,000	$100,000	$0	$486,000	79%
(d)	Construction/Implementation	$3,663,781	$1,261,219	$0	$4,925,000	0%
(e)	Environmental Compliance/ Mitigation/Enhancement	$0	$0	$0	$0	0%
(f)	Construction Administration	$425,360	$75,000	$0	$500,360	0%
(g)	Other Costs (Including Legal Costs, Permitting and Licenses)	$0	$0	$0	$0	0%
(h)	Construction/Implementation Contingency	$125,000	$0	$0	$125,000	0%
(i)	**Grand Total** (Sum rows (a) through (h) for each column)	**$4,700,141**	**$1,461,219**	**$0**	**$6,161,360**	**76%**

Economic Analysis: Water Supply

Project Benefit Costs Comparison

The total present value of the costs for the Project, along with monetized and qualitative benefits, is provided in Table 7.18.

Table 7.19: Benefit-Cost Analysis Overview

	Present Value (In 2009 Dollars)
Costs – Total Capital and O&M	$10,603,033
Monetizable Benefits	$0
Qualitative Benefits	**Qualitative Indicator****
Reduction in pollution to groundwater	+
Reduction in pollution discharge to ocean	+
Flood damage reduction	+
** *Magnitude of effect on net benefits* *+/- (negligible or unknown)* *+ (moderate)* *++ (significant)*	

Methods used to Estimate With- and Without-Project Conditions

The annual cost of implementation of the Project is provided in Table 7.C.1 of Appendix 7.C. Operational costs will begin in 2012. Additional operations costs in 2012 and 2013 represent additional personnel and oversight as well as startup costs. Maintenance on the Project is not expected to be needed until 2013, with a larger amount planned in the beginning for the initial start-up to accommodate additional personnel.

The annual water supply benefits of implementing the Project are provided in Table 7.C.2 of Appendix 7.C. There are no water supply benefits provided by the Project since there will be no additional pumping capacity in the basin and, therefore, no replacement of imported water purchases.

The annual costs of avoided projects are provided in Table 7.C.3 of Appendix 7.C. There are no annual costs of avoided projects associated with implementation of this Project.

The annual other water supply benefits of the Project are provided in Table 7.C.4 of Appendix 7.C. There are no monetized annual other water supply benefits associated with implementation of this Project.

Economic Analysis: Water Supply

The total water supply benefits for the Project are provided in Table 7.C.5 of Appendix 7.C. There are no monetized total water supply benefits associated with implementation of this Project.

V. Penmar Water Quality Improvement and Runoff Reuse Improvement Project

Water Supply Benefits

The Project will result in the water supply benefits summarized in Table 7.20. This Project would result in water supply benefits associated with avoided water supply purchases and improved water supply reliability. The magnitude of benefits, monetized when possible, is reported in Table 7.24. Detailed cost and benefit information associated with the Project, including present value calculations, is presented in Appendix 7.D.

Table 7.20: Benefits Summary

Type of Benefit	Assessment Level	Beneficiaries
Avoided water import purchases	Monetized	Local / Regional / Statewide
Improved water supply reliability	Qualitative	Local and Regional

Avoided Water Supply Purchases

This Project is expected to generate water savings through avoided purchase of imported water supply. The Project will capture urban dry-weather flows and stormwater runoff generated from a 1,468-acre tributary area during storm events. This water will be stored, treated, and reused for irrigation purposes. By increasing local water supplies, the Project will reduce dependency on imported water and preserve potable water supply for uses other than irrigation.

Based on Total Maximum Daily Load (TMDL) model diversion assumptions of 0.44 cubic feet per second (cfs) dry-weather flow and 10 storms per year, and water supply estimates based on treating stormwater and dry weather flows, it is estimated the system will capture 324 acre-feet per year (AFY). To account for variability in storm weather patterns and water quality, the economic analysis took only 40% of the 324 AFY total for the water supply calculations.

Economic Analysis: Water Supply

In addition, 3.5 AFY were deducted from 324 AFY to account for the water used in the 16th Street Watershed Runoff Use Demonstration Project economic analysis. Based on these assumptions, the Project will reduce the purchase of imported water by 126 AFY. The avoided cost of water conserved has a present value benefit in 2009 dollars of approximately $1,764,283 assuming a 6% discount rate.

Improved Water Supply Reliability

The reliability of a water supply refers to the ability to meet water demands on a consistent basis, even in times of drought or other constraints on source water availability. This Project will provide imported water conservation and reduce imported water demand.

Although interest in water supply reliability is increasing, only a few studies have directly attempted to quantify its value. These studies indicate that residential and industrial (i.e., urban) customers seem to value supply reliability quite highly. Stated preference studies concluded that the annual value of water reliability ranged from $93 to $489 per household (updated to 2009 dollars) for total reliability (i.e., a 0% probability of their water supply being interrupted in times of drought).

The challenge of using such information to determine the value of the Project is interpreting the survey-based household monetary values. The values noted above reflect a willingness-to-pay to ensure complete reliability (zero drought-related use restrictions in the future), whereas these integrated projects enhance only overall reliability, but do not guarantee 100% reliability. Thus, the dollar values from the studies will probably overstate the reliability value provided by the Project. One simple way to roughly adjust for this "whole versus part" problem is to attribute a portion of the total value of reliability to the portion of the project that is solved by the project.

Distribution of Project Benefits and Identification of Beneficiaries

By increasing local water supply reliability, the Project will reduce the water supply costs, lowering water rates paid by local ratepayers. The Project has the potential to benefit MWD customers through increased availability of water supplies and to mitigate the declining conditions of the Bay-Delta Ecosystem through reduced water exports.

Table 7.21: Project Beneficiaries Summary

Local	Regional	Statewide
Local water users	MWD customers	Bay-Delta Ecosystem

Economic Analysis: Water Supply

Project Benefits Timeline Description

This Project will provide water supply benefits beginning in 2013 and beyond the 50-year Project lifetime.

Uncertainty of Benefits

Projected savings through capture of dry- and wet-weather runoff flows from storm events represent best estimates based on the latest available data. Actual water savings will vary.

Table 7.22: Omissions, Biases, and Uncertainties and Their Effect on the Project

Benefit or cost category	Likely impact on net benefits*	Comment
Avoided Imported Water Cost		
• Water rate forecast (MWD)	+/-	Margin of error implicit in forecasting
• Climate	+	The projections also are driven by "normal year" expectations, whereas dry year conditions will add additional cost pressures (and may move some of the imported water to higher cost Tier 2 levels).
• Regulatory/legal	+	Regulatory/ legal issues combine to make it more likely than not that the future availability of MWD-provided imported waters will be increasingly constrained, and that costs will escalate at rates higher than experienced in the recent past.
• Increased water demands	+	Other MWD users may increase their demand which may result in higher rates (holding supply constant)
• Increased water use efficiency	-/+	If local water users increase/decrease their water efficiency, less/more dry weather runoff would be available for treatment and reuse; therefore, quantity of avoided water imports could be overstated/understated.
• Local water purveyor cost	+	MWD wholesale water rates do not include local purveyor costs, which are included in the water rates paid to LADWP by the City of Los Angeles. If these costs were included in the price of water, avoided water costs would be higher.
Water Supply Reliability	+	The monetized value of added reliability is not

Economic Analysis: Water Supply

Benefit or cost category	Likely impact on net benefits*	Comment
		included in the benefit-cost comparison. If we had added the present value benefit of improved water supply reliability in the overall benefit-cost analysis, it would increase net benefits.

* *Direction and magnitude of effects on net benefits*
- *+ Likely to increase net benefits relative to quantified estimates*
- *++ Likely to increase net benefits significantly*
- *- Likely to decrease net benefits*
- *-- Likely to decrease net benefits significantly*
- *+/- Uncertain*

The "Without Project" Baseline

If this Project is not implemented, potable water will continue to be used for irrigation purposes when other water sources, such as recycled or reclaimed, would suffice.

Potential Adverse Effects from the Project

Any potential short-term impacts associated with Project construction will be mitigated. No long-term adverse effects are expected as a result of the proposed Project.

Project Costs

The total estimated cost for the Project is $24,581,775. When operations and maintenance costs through 2060 are considered, the present value in 2009 dollars is $27,269,735. Capital costs will be expended between 2010 and 2013, with the largest capital cost in construction and implementation. The operation and maintenance costs are estimated to be $435,400 in 2014 when both phases of the Project have been completed. Detailed cost information associated with the Project, including present value calculations is presented in Appendix 7.D.

Table 7.23: Project Budget

		(a)	(b)	(c)	(d)	(e)
Budget Category		**Non-State Share* (Funding Match)**	**Requested Grant Funding**	**Other State Funds Being Used**	**Total**	**% Funding Match**
(a)	Direct Project Administration Costs	$783,750	$0	$0	$783,750	100%

Economic Analysis: Water Supply

	Budget Category	(a) Non-State Share* (Funding Match)	(b) Requested Grant Funding	(c) Other State Funds Being Used	(d) Total	(e) % Funding Match
(b)	Land Purchase/Easement	$0	$0	$0	$0	0%
(c)	Planning/Design/Engineering / Environmental Documentation	$1,892,625	$0	$0	$1,892,625	100%
(d)	Construction/ Implementation	$15,237,263	$2,922,437	$0	$18,159,700	84%
(e)	Environmental Compliance/ Mitigation/Enhancement	$29,800	$0	$0	$29,800	100%
(f)	Construction Administration	$1,864,000	$0	$0	$1,864,000	100%
(g)	Other Costs (Including Legal Costs, Permitting and Licenses)	$85,800	$0	$0	$85,800	100%
(h)	Construction/Implementation Contingency	$1,766,100	$0	$0	$1,766,100	100%
(i)	**Grand Total** (Sum rows (a) through (h) for each column)	**$21,659,338**	**$2,922,437**	**$0**	**$24,581,775**	**88%**

Project Benefit Costs Comparison

The total present value of the costs for the Project and monetized and qualitative benefits are provided in Table 7.24.

Table 7.24: Benefit-Cost Analysis Overview

	Present Value (In 2009 Dollars)
Costs – Total Capital and O&M	$27,269,735
Monetizable Benefits Water Supply Benefits **Total Benefits**	 $1,764,283 **$1,764,283**
Qualitative Benefits Improved water supply reliability Reduction in pollutant discharged to ocean Recreation benefits from improved ocean water quality Flood damage reduction	**Qualitative Indicator**** + ++ + +
** *Magnitude of effect on net benefits*	

Economic Analysis: Water Supply

	Present Value (In 2009 Dollars)
+/- (negligible or unknown) *+ (moderate)* *++ (significant)*	

Methods used to Estimate With- and Without-Project Conditions

The annual cost of implementation of the Project is provided in Table 7.D.1 of Appendix 7.D. The life of the Project is estimated to be 50 years. The operation and maintenance cost for the first year of operation will be $217,700, and will increase to $435,400 when Phase II is completed. The Project also assumes replacements as follows: mechanical equipment every 20 years, all filters throughout the year, some UV bulb replacements each year.

The annual water supply benefits of implementing the Project are provided in Table 7.D.2 of Appendix 7.D. For this analysis, the water quantity estimate was based on treating stormwater and dry-weather flows. The water rate used for the analysis was the MWD Tier 1 treated water rate. Based on TMDL model assumptions on diversion of 0.44 cfs dry-weather flow and 10 storms per year filling the tank, the system will capture 324 AFY. To account for variability in storm events and water quality, only 40% of 324 AFY was used for the water supply calculations.

In addition, 3.5 AFY was deducted from the calculations to account for the water that will be used by the 16th Street Watershed Runoff Use Demonstration Project benefit analysis.

The annual costs of avoided projects are provided in Table 7.D.3 of Appendix 7.D. There are no annual costs of avoided projects associated with implementation of this Project.

The annual other water supply benefits of the Project are provided in Table 7.D.4 of Appendix 7.D. There are no annual other water supply benefits associated with implementation of this Project.

The annual total water supply benefits for the Project are provided in Table 7.D.5 of Appendix 7.D. These benefits are provided through avoided potable water purchases and have a present value of $1,764,283.

VI. Model Equestrian Center Project

Water Supply Benefits

This Project will result in water supply benefits associated with avoided water supply purchases and improved water supply reliability as summarized in Table 7.25. The magnitude of benefits, monetized when possible, is reported in Table 7.29. Detailed cost and benefit information associated with the Project, including present value calculations, is presented in Appendix 7.E.

Table 7.25: Benefits Summary

Type of Benefit	Assessment Level	Beneficiaries
Avoided water supply purchases	Monetized	Local / Regional / Statewide
Improved water supply reliability	Qualitative	Local and Regional

Avoided Water Supply Purchases

This Project is expected to generate water savings through avoided potable water supply purchases. The new 15,000 square-foot barn and associated improvements includes key water quality features, such as rainwater harvesting, a covered horse wash area with wash water captured and re-used for dust control in arenas, and/or subsurface irrigation to maintain appearance of habitat buffers and treatment bioswales. The benefits will result in 2/3 of wash water being reused. As a result, this Project will reduce water purchases (and associated costs) by 0.6 AFY. This water would otherwise be purchased from MWD. Therefore, the avoided cost of water conserved has a present value benefit of approximately $8,368, in 2009 dollars assuming a 6% discount rate.

Improved Water Supply Reliability

The reliability of a water supply refers to the ability to meet water demands on a consistent basis, even in times of drought or other constraints on source water availability. This Project provides for water conservation and reduces water demand.

Although interest in water supply reliability is increasing, only a few studies have directly attempted to quantify its value. These studies indicate that residential and industrial (i.e., urban) customers seem to value supply reliability quite highly. Stated preference studies concluded that the annual value of water reliability ranged from $93 to $489 per household

(updated to 2009 dollars) for total reliability (i.e., a 0% probability of their water supply being interrupted in times of drought).

The challenge of using such information to determine the value of the Project is interpreting the survey-based household monetary values. The values noted above reflect a willingness-to-pay to ensure complete reliability (zero drought-related use restrictions in the future), whereas these integrated projects enhance only overall reliability, but do not guarantee 100% reliability. Thus, the dollar values from the studies will probably overstate the reliability value provided by the Project. One simple way to roughly adjust for this "whole versus part" problem is to attribute a portion of the total value of reliability to the portion of the project that is solved by the project.

Distribution of Project Benefits and Identification of Beneficiaries

The following table summarizes the Project's beneficiaries. This Project will benefit the equestrian center users through lower operating costs. The Project has the potential to benefit State Water Project (SWP) customers through increased availability of supplies. It will also mitigate declining ecosystem conditions of the Bay-Delta Ecosystem through reduced water exports.

Table 7.26: Project Beneficiaries Summary

Local	Regional	Statewide
Equestrian center users	SWP customers	Bay-Delta Ecosystem

Project Benefits Timeline Description

The Project would provide benefits in excess of the 50-year project lifetime (2012-2060).

Uncertainty of Benefits

The projected savings from capturing runoff are the best estimates based on the latest available data. Actual water savings will vary.

Table 7.27: Omissions, Biases, and Uncertainties and their Effect on the Project

Benefit or cost category	Likely impact on net benefits**	Comment
Avoided Imported Water Cost • Water rate forecast (MWD)	+/-	Margin of error implicit in forecasting

Economic Analysis: Water Supply

Benefit or cost category	Likely impact on net benefits**	Comment
• Climate	+	The projections are driven by "normal year" expectations, whereas dry year conditions will add additional cost pressures (and may move some of the imported water to higher cost Tier 2 levels).
• Regulatory/legal	+	Regulatory/ legal issues combine to make it more likely than not that the future availability of MWD-provided imported waters will be increasingly constrained, and that costs will escalate at rates higher than experienced in the recent past.
• Increased water demands	+	Other SWP users may increase their demand which may result in higher rates (holding supply constant).
• Decreased equestrian center use	-	If actual capacity utilization at the equestrian center is below expected levels upon which water supply needs are estimated, then cost-savings are overstated.
• Local purveyor water costs	+	MWD wholesale water rates do not include local purveyor costs, which are included in the water rates paid by the equestrian center. If these costs were included in the price of water, avoided water costs would be higher.
Water Supply Reliability	+	The monetized value of added reliability is not included in the benefit-cost comparison. If we had added the present value benefit of improved water supply reliability in the overall benefit-cost analysis, it would increase net benefits.

** *Direction and magnitude of effects on net benefits*
- *+ Likely to increase net benefits relative to quantified estimates*
- *++ Likely to increase net benefits significantly*
- *"-" Likely to decrease net benefits*
- *"--" Likely to decrease net benefits significantly*
- *+/- Uncertain*

The "Without Project" Baseline

If this Project is not implemented, potable water will continue to be wasted on applications where other types of water, such as reclaimed or recycled, would be sufficient.

Economic Analysis: Water Supply

Potential Adverse Effects from the Project

Any potential short-term impacts associated with project construction, such as dust or noise, will be mitigated. No long-term adverse effects are expected as a result of the proposed Project.

Project Costs

The total estimated cost for the Project over the Project timeline is $1,980,260, for a present value of $5,303,972. Capital and maintenance costs will be expended in 2011 and 2012, with the largest capital cost being construction and implementation. Operations and maintenance costs are estimated to be $252,666 in 2013. Detailed cost information associated with the Project, including present value calculations is presented in Appendix 7.E.

Table 7.28: Project Budget

		(a)	(b)	(c)	(d)	(e)
Budget Category		**Non-State Share* (Funding Match)**	**Requested Grant Funding**	**Other State Funds Being Used**	**Total**	**% Funding Match**
(a)	Direct Project Administration Costs	$29,500	$0	$0	$29,500	100%
(b)	Land Purchase/Easement	$0	$0	$0	$0	0%
(c)	Planning/Design/Engineering/ Environmental Documentation	$263,364	$0	$0	$263,364	100%
(d)	Construction/Implementation	$0	$1,032,800	$0	$1,032,800	0%
(e)	Environmental Compliance/ Mitigation/Enhancement	$15,983	$19,017	$0	$35,000	0%
(f)	Construction Administration	$0	$103,280	$0	$103,280	0%
(g)	Other Costs (Including Legal Costs, Permitting and Licenses)	$46,476	$160,000	$0	$206,476	23%
(h)	Construction/Implementation Contingency	$309,840	$0	$0	$309,840	100%
(i)	**Grand Total** (Sum rows (a) through (h) for each column)	**$665,163**	**$1,315,097**	**$0**	**$1,980,260**	**34%**

Economic Analysis: Water Supply

Project Benefit Costs Comparison

The total present value of the costs for the Project and monetized and qualitative benefits are provided in Table 7.29.

Table 7.29: Benefit-Cost Analysis Overview

	Present Value (in 2009 dollars)
Costs – Total Capital and O&M	$5,303,972
Monetizable Benefits	$0
Water Supply Benefits	$8,368
Other Benefits (Recreation)	$351,692
Total Benefits	**$360,060**
Qualitative Benefits	**Qualitative Indicator****
Improved water supply reliability	+/-
Reduction in pollutant loading through runoff	+
Other Benefits (Habitat Creation)	+/-

** *Magnitude of effect on net benefits*
+/- (negligible or unknown)
+ (moderate)
++ (significant)

Methods used to Estimate With- and Without-Project Conditions

The annual cost of implementation of the Project is provided in Table 7.E.1 of Appendix 7.E. The life of the Project is estimated to be 50 years. Administration and operation costs for this Project were estimated from the 2009-2010 facility budget are by using a factor of 0.35to proportionally represent the additional costs associated with the new portion of the facility (excluding electricity and water, which are addressed in Water Quality (WQ) & other benefits sheet) plus additional annual maintenance cost of $5,000 to maintain the new retrofit areas.

The annual water supply benefits of implementing the Project are provided in Table 7.E.2 of Appendix 7.E. The water supply benefits are provided by avoiding potable water supply purchases due to wash water reuse and rainwater harvesting. For this Project, it was assumed that all rainfall runoff from the barn roof can be captured (assuming an average annual rainfall of 12 inches for the region), and that 2/3 of wash water can be reused.

The annual costs of avoided projects are provided in Table 7.E.3 of Appendix 7.E. There are no annual costs of avoided projects associated with implementation of this Project.

Economic Analysis: Water Supply

The annual other water supply benefits of the Project are provided in Table 7.E.4 of Appendix 7.E. There are no annual other water supply benefits associated with implementation of this Project.

The annual total water supply benefits for the Project are provided in Table 7.E.5 of Appendix 7.E. These benefits are provided through avoided potable water purchases and have a present value of $8,368.

VII. 16th Street Watershed Runoff Use Project

Water Supply Benefits

This Project will result in water supply benefits associated with avoided water supply purchases and improved water supply reliability (summarized in Table 7.30). The magnitude of benefits, monetized when possible, is reported in Table 7.34. Detailed cost and benefit information associated with the Project, including present value calculations, is presented in Appendix 7.F.

Table 7.30: Benefits Summary

Type of Benefit	Assessment Level	Beneficiaries
Avoided water supply purchases	Monetized	Local / Regional / Statewide
Improved water supply reliability	Qualitative	Local and Regional

Avoided Water Supply Purchases

This Project is expected to generate water savings through avoided use of potable water supply purchases for irrigation. The new 4,000 linear feet (LF) of pipeline connecting Marine Park to the Penmar Water Quality Improvement Project, new cistern, and new pumping system will allow for the storage and use of treated stormwater for irrigation. The Project will reduce water purchases and associated costs by the equivalent of 3.5 AFY. This water would otherwise be purchased from MWD. Therefore the avoided cost of water conserved has a present value benefit in 2009 dollars of approximately $68,612 assuming a 6% discount rate.

Economic Analysis: Water Supply

Improved Water Supply Reliability

The reliability of a water supply refers to the ability to meet water demands on a consistent basis, even in times of drought or other constraints on source water availability. This Project provides for water conservation and reduces water demand.

Although interest in water supply reliability is increasing, only a few studies have directly attempted to quantify its value. The studies indicate that residential and industrial (i.e., urban) customers seem to value supply reliability quite highly. Stated preference studies found that the annual value of reliability ranged from $93 to $489 per household (updated to 2009 dollars) for total reliability (i.e., a 0% probability of their water supply being interrupted in times of drought).

The challenge of using such information to determine the value of the Project is interpreting the survey-based household monetary values. The values noted above reflect a willingness-to-pay to ensure complete reliability (zero drought-related use restrictions in the future), whereas these integrated projects enhance only overall reliability, but do not guarantee 100% reliability. Thus, the dollar values from the studies will probably overstate the reliability value provided by the Project. One simple way to roughly adjust for this "whole versus part" problem is to attribute a portion of the total value of reliability to the portion of the problem that is solved by the project.

Distribution of Project Benefits and Identification of Beneficiaries

This Project benefits the Marine Park by lowering the operating costs resulting in increased availability of funds for other Marine Park requirements (Table 7.31). The Project has the potential to benefit State Water Project (SWP) customers through increased availability of water supplies and mitigation of declining ecosystem conditions in the Bay-Delta ecosystem through reduced water exports.

Table 7.31: Project Beneficiaries Summary

Local	Regional	Statewide
Marine Park	SWP customers	Bay-Delta Ecosystem

Project Benefits Timeline Description

The Project would provide water supply benefits for 21 years (2014-2034) after the completion of Phase 1 of the Penmar Project, scheduled for 2014. Based on cost distribution over time, costs are assumed to begin in 2011 and benefits begin in 2014, both extending through 2034.

Economic Analysis: Water Supply

Uncertainty of Benefits

Projected savings by utilizing treated stormwater represent best estimates based on the latest available data (Table 7.32). Actual water savings will vary.

Table 7.32: Omissions, Biases, and Uncertainties and their Effect on the Project

Benefit or cost category	Likely impact on net benefits**	Comment
Avoided Imported Water Cost		
• Water rate forecast (MWD)	+/-	Margin of error implicit in forecasting
• Climate	+	The projections also are driven by "normal year" expectations, whereas dry year conditions will add additional cost pressures (and may move some of the imported water to higher cost Tier 2 levels).
• Regulatory/legal	+	Regulatory/ legal issues combine to make it more likely than not that the future availability of MWD-provided imported waters will be increasingly constrained, and that costs will escalate at rates higher than experienced in the recent past.
• Increased water demands	+	Other SWP users may increase their demand and may result in higher rates (holding supply constant)
Water Supply Reliability	+	The monetized value of added reliability is not included in the benefit-cost comparison. If we had added the present value benefit of improved water supply reliability in the overall benefit-cost analysis, it would increase net benefits.

** *Direction and magnitude of effects on net benefits*
- *+ Likely to increase net benefits relative to quantified estimates*
- *++ Likely to increase net benefits significantly*
- *- Likely to decrease net benefits*
- *-- Likely to decrease net benefits significantly*
- *+/- Uncertain*

The "Without Project" Baseline

If this Project is not implemented, potable water will continue to be purchased for irrigation when other water sources, such as reclaimed or recycled, would be sufficient.

Economic Analysis: Water Supply

Potential Adverse Effects from the Project

Any potential short-term impacts associated with Project construction, such as dust or noise, will be mitigated. No long-term adverse effects are expected as a result of the proposed Project.

Project Costs

The total estimated cost for the Project is $2,364,950, for a present value of $1,918,312. Capital and maintenance costs will be expended in 2011 through 2014, with the largest capital cost being construction and implementation. The maintenance costs are estimated to be $10,000 in 2014. Detailed cost information associated with the Project, including present value calculations is presented in Appendix 7.F.

Table 7.33: Project Budget

		(a)	(b)	(c)	(d)	(e)
Budget Category		**Non-State Share* (Funding Match)**	**Requested Grant Funding**	**Other State Funds Being Used**	**Total**	**% Funding Match**
(a)	Direct Project Administration Costs	$6,737	$0	$0	$6,737	100%
(b)	Land Purchase/Easement	$65,862	$0	$0	$65,862	100%
(c)	Planning/Design/Engineering/ Environmental Documentation	$87,915	$0	$0	$87,915	100%
(d)	Construction/Implementation	$608,627	$1,315,243	$0	$1,923,870	32%
(e)	Environmental Compliance/ Mitigation/Enhancement	$0	$0	$0	$0	0%
(f)	Construction Administration	$85,212	$0	$0	$85,212	100%
(g)	Other Costs (Including Legal Costs, Permitting and Licenses)	$2,967	$0	$0	$2,967	100%
(h)	Construction/Implementation Contingency	$192,387	$0	$0	$192,387	100%
(i)	**Grand Total** (Sum rows (a) through (h) for each column)	**$1,049,707**	**$1,315,243**	**$0**	**$2,364,950**	**44%**

Note: Costs shown include those incurred in 2009 and 2010.

Economic Analysis: Water Supply

Project Benefit Costs Comparison

The total present value of the costs for the Project, along with monetized and qualitative benefits, is provided in Table 7.34.

Table 7.34: Benefit-Cost Analysis Overview

	Present Value (In 2009 Dollars)
Costs – Total Capital and O&M	**$1,918,312**
Monetizable Benefits	
Water Supply Benefits	$68,612
Water Quality Benefits	$0
Other Benefits (Recreation, Power)	$0
Total Benefits	**$68,612**
Qualitative Benefits	**Qualitative Indicator***
Improved beach water quality	+/-
Protect beneficial uses of Santa Monica Bay	+
Protect natural processes and habitats	+/-

* *Magnitude of effect on net benefits*
+/- (negligible or unknown)
+ (moderate)
++ (significant)

Methods used to Estimate With- and Without-Project Conditions

The annual cost of implementation of the Project is provided in Table 7.F.1 of Appendix 7.F. The life of the Project is estimated to be 21 years. The potable irrigation system currently exists and incurs operational and maintenance costs. Completion of the proposed Project will not result in an increase in O&M costs except for periodic inspection and maintenance of the pumps at Marine Park. Based on City maintenance staff experience, the annual maintenance costs are fairly low; however, once every three years of use, pumps typically require replacement or major repairs. Costs in Table 7.F.1 of Appendix 7.F reflect these incremental costs.

The annual water supply benefits of implementing the Project are provided in Table 7.F.2 of Appendix 7.F. The water quantity estimate is based on City of Los Angeles' treatment of only rain water, not dry weather flows. If the City of Los Angeles decides to treat dry weather flows, the water quantity estimate may increase.

The annual costs of avoided projects are provided in Table 7.F.3 of Appendix 7.F. There are no annual costs of avoided projects associated with implementation of this Project.

Economic Analysis: Water Supply

The annual other water supply benefits of the Project are provided in Table 7.F.4 of Appendix 7.F. There are no annual other water supply benefits associated with implementation of this.

The annual total water supply benefits for the Project are provided in Table 7.F.5 of Appendix 7.F. These benefits are provided through avoided potable water purchases and have a present value of $68,612.

VIII. Surface Water Treatment Plant Improvements

Water Supply Benefits

This Project will result in the water supply benefits summarized in Table 7.35. This Project will result in water supply benefits associated with avoided water supply purchases. The magnitude of benefits, monetized when possible, is reported in Table 7.39. Detailed cost and benefit information associated with the Project, including present value calculations, is presented in Appendix 7.G.

Table 7.35: Benefits Summary

Type of Benefit	Assessment Level	Beneficiaries
Avoided water supply purchases	Monetized	Local / Regional / Statewide

Avoided Water Supply Purchases

This Project is expected to generate water savings through avoided purchase of imported potable water supply. The Stage II Disinfection Byproducts Rule (DBP Rule) will render the Temple Water Treatment Plant (TWTP) in non-compliance and it will be forced to shut down. If the TWTP is shut down, CIC customers will be obligated to purchase Tier 1 treated water from MWD. The Project will reduce water purchases and associated costs by 7,500 AFY in 2012. Once the Stage II DBP Rule goes into effect in mid-2012 the Project will reduce water purchases and associated costs by 12,000 AFY from 2013-2060. Therefore the avoided water purchase cost of water conserved has a present value benefit in 2009 dollars of approximately $172,150,784, assuming a 6% discount rate. The avoided water purchase cost of water conserved represents the added cost to CIC customers as well as lost revenues to CIC.

Economic Analysis: Water Supply

Improved Water Supply Reliability

The reliability of a water supply refers to the ability to meet water demands on a consistent basis, even in times of drought or other constraints on source water availability. This Project will reduce imported water demand.

Although interest in water supply reliability is increasing, only a few studies have directly attempted to quantify its value. These studies indicate that residential and industrial (i.e., urban) customers seem to value supply reliability quite highly. Stated preference studies concluded that the annual value of water reliability ranged from $93 to $489 per household (updated to 2009 dollars) for total reliability (i.e., a 0% probability of their water supply being interrupted in times of drought).

The challenge of using such information to determine the value of the Project is interpreting the survey-based household monetary values. The values noted above reflect a willingness-to-pay to ensure complete reliability (zero drought-related use restrictions in the future), whereas these integrated projects enhance only overall reliability, but do not guarantee 100% reliability. Thus, the dollar values from the studies will probably overstate the reliability value provided by the Project. One simple way to roughly adjust for this "whole versus part" problem is to attribute a portion of the total value of reliability to the portion of the problem that is solved by the project.

Distribution of Project Benefits and Identification of Beneficiaries

The following table summarizes the Project's beneficiaries. This Project benefits the local water purveyors that purchase CIC water supplies by not purchasing imported water from MWD, which allows lower water costs to be passed on to the customers. It also prevents CIC from experiencing loss in revenue from the cessation of treatment plant operations. The Project will also keep current supplies available to regional MWD water users and benefit the Bay-Delta Ecosystem by mitigation of declining ecosystem conditions through reduced water exports.

Table 7.36: Project Beneficiaries Summary

Local	Regional	Statewide
CIC; local water purveyors reliant on CIC supplies and their customers	MWD customers	Bay-Delta Ecosystem

Project Benefits Timeline Description

Economic Analysis: Water Supply

This Project would provide water supply benefits in excess of the 50-year Project lifetime (2012-2060).

Uncertainty of Benefits

Projected savings through treatment plant improvements represent best estimates based on the latest available data. Actual water savings will vary.

Table 7.37: Omissions, Biases, and Uncertainties and their Effect on the Project

Benefit or cost category	Likely impact on net benefits**	Comment
Avoided Imported Water Cost		
• Water rate forecast (MWD)	+/-	Margin of error implicit in forecasting
• Climate	+	The projections also are driven by "normal year" expectations, whereas dry year conditions will add additional cost pressures (and may move some of the imported water to higher cost Tier 2 levels).
• Regulatory/legal	+	Regulatory/ legal issues combine to make it more likely than not that the future availability of MWD-provided imported waters will be increasingly constrained, and that costs will escalate at rates higher than experienced in the recent past.
• Increased water demands	+	Other SWP users may increase their demand which may result in higher rates (holding supply constant)
• TWTP shutdown due to noncompliance	--	The probability of shutdown and duration of shutdown with and without the project is uncertain. However, any shutdown of TWTP would significantly decrease the net benefits.
Water Supply Reliability	++	The monetized value of added reliability is not included in the benefit-cost comparison. If we had added the present value benefit of improved water supply reliability in the overall benefit-cost analysis, it would increase net benefits significantly.

** *Direction and magnitude of effects on net benefits*

+ *Likely to increase net benefits relative to quantified estimates*

++ *Likely to increase net benefits significantly*

- *Likely to decrease net benefits*

-- *Likely to decrease net benefits significantly*

+/- *Uncertain*

Economic Analysis: Water Supply

The "Without Project" Baseline

If this Project is not implemented, more expensive imported potable water will need to be purchased or groundwater will need to be pumped.

Potential Adverse Effects from the Project

Any potential short-term impacts associated with Project construction will be mitigated. No long-term adverse effects are expected as a result of the proposed Project.

Project Costs

The total estimated cost for the Project is $6,811,784. When operations and maintenance costs through 2060 are considered, the present value in 2009 dollars is $10,660,636. Capital and maintenance costs will be expended between 2011 and 2013, with the largest capital cost in construction and implementation. The operation and maintenance costs are estimated to be $268,628 in 2011. Detailed cost information associated with the Project, including present value calculations is presented in Table 7.G.1 of Appendix 7.G.

Table 7.38: Project Budget

		(a)	(b)	(c)	(d)	(e)
Budget Category		**Non-State Share* (Funding Match)**	**Requested Grant Funding**	**Other State Funds Being Used**	**Total**	**% Funding Match**
(a)	Direct Project Administration Costs	$90,475	$0	$0	$90,475	100%
(b)	Land Purchase/Easement	$0	$0	$0	$0	0%
(c)	Planning/Design/Engineering/ Environmental Documentation	$498,411	$0	$0	$498,411	100%
(d)	Construction/Implementation	$1,879,725	$3,068,559	$0	$4,948,284	38%
(e)	Environmental Compliance/ Mitigation/Enhancement	$0	$0	$0	$0	0%
(f)	Construction Administration	$33,000	$0	$0	$33,000	100%
(g)	Other Costs (Including Legal Costs, Permitting and Licenses)	$10,000	$0	$0	$10,000	100%

Economic Analysis: Water Supply

	Budget Category	(a) Non-State Share* (Funding Match)	(b) Requested Grant Funding	(c) Other State Funds Being Used	(d) Total	(e) % Funding Match
(h)	Construction/Implementation Contingency	$1,231,614	$0	$0	$1,231,614	100%
(i)	**Grand Total** (Sum rows (a) through (h) for each column)	**$3,743,225**	**$3,068,559**	**$0**	**$6,811,784**	**55%**

Note: Costs shown include those incurred in 2009 and 2010.

Project Benefit Costs Comparison

The total present value of the costs for the Project, along with monetized and qualitative benefits, is provided in Table 7.39.

Table 7.39: Benefit-Cost Analysis Overview

	Present Value (in 2009 Dollars)
Costs – Total Capital and O&M	$10,660,636
Monetizable Benefits	
Water Supply Benefits	$172,150,784
Water Quality Benefits	$0
Other Benefits (Recreation, Power)	$0
Total Benefits	**$172,150,784**
Qualitative Benefits	**Qualitative Indicator***
Improved water supply reliability	++
Reduction in disinfectant byproducts (DBPs)	+

* *Magnitude of effect on net benefits*
+/- (negligible or unknown)
+ (moderate)
++ (significant)

Methods used to Estimate With- and Without-Project Conditions

The annual cost of implementation of the Project is provided in Table 7.G.1 of Appendix 7.G. The life of the Project is estimated to be 50 years. The values used for this analysis were derived from the Project's Preliminary Design Report (see Appendix x-x for Preliminary Design Report).

Economic Analysis: Water Supply

The annual water supply benefits of implementing the Project are provided in Table 7.G.2 of Appendix 7.G. For this analysis, MWD Tier I treated rates were used for the value of the water.

The annual costs of avoided projects are provided in Table 7.G.3 of Appendix 7.G. There are no annual costs of avoided projects associated with implementation of this Project.

The annual other water supply benefits of the project are provided in Table 7.G.4 of Appendix 7.G. There are no annual other water supply benefits associated with implementation of this Project.

The total water supply benefits for the Project are provided in Table 7.G.5 of Appendix 7.G. These benefits are provided through avoided potable water purchases and have a present value of $172,150,784.

IX. Central Los Angeles County Regional Water Recycling Program

Water Supply Benefits

This Project is composed of two components: the Griffith Park South Water Recycling Project (Griffith Park Project) and the Groundwater Replenishment Facilities Planning Study (GWR Study). The Project will result in water supply benefits associated with avoided water supply purchases, and improve water supply reliability (summarized in Table 7.40). The magnitude of benefits, monetized when possible, is reported in Table 7.44. Detailed cost and benefit information associated with the Project, including present value calculations, is presented in Appendix 7.H.

Table 7.40: Benefits Summary

Type of Benefit	Assessment Level	Beneficiaries
Avoided water supply purchases (Griffith Park South Recycled Water Distribution System)	Monetized	Local / Regional / Statewide
Potential avoided water supply purchases (Groundwater Replenishment into Raymond Basin)	Physical Quantification	Local / Regional / Statewide
Improved water supply reliability	Qualitative	Local / Regional / Statewide

Economic Analysis: Water Supply

Avoided Water Supply Purchases

The Griffith Park Project is expected to generate water savings through avoided purchase of imported water supply from the Metropolitan Water District of Southern California (MWD). This will be achieved through the construction of the required components for transferring recycled water to the 9-hole Roosevelt Municipal Golf Course, including a facility and related infrastructure. The Griffith Park Project will reduce non-potable water purchases and associated costs by 450 acre-feet per year (AFY). The Roosevelt Municipal Golf Course receives MWD Tier 1 untreated water 50 weeks of the year; therefore, the avoided water purchase costs are based on MWD wholesale rates for Tier 1 untreated water. The projected average cost in 2009 dollars of Tier 1 untreated MWD water during the Griffith Park Project lifetime, from 2014 to 2060, is $852/AF The resulting average annual cost savings are projected to be $383,400 (before discounting). Therefore the avoided water purchase costs of water conserved has a present value benefit in 2009 dollars of approximately $4,231,326, assuming a 6% discount rate.

The GWR Study component of the Project will determine the feasibility of recharging up to 2,700 AFY of water into the Raymond Basin. This analysis does not monetize the avoided water purchase costs that would be expected to result.

Improved Water Supply Reliability

The reliability of a water supply refers to the ability to meet water demands on a consistent basis, even in times of drought or other constraints on source water availability. This Project reduces the demand for water from the State Water Project (SWP) by shifting to local supply. This will benefit California residents and State and local government agencies involved in water management in preparing for drought years by reducing the uncertainty of demand for water supplies.

Other SWP users will benefit from increased supply reliability including, but not limited to, other Southern California municipal water users that depend on the availability of supplies from MWD. Studies have shown municipal water users throughout California are willing to pay in order to avoid water shortages and reduce water scarcity[2]. Jenkins et al (2001) estimated that

[2] Jenkins et al (2001) used programming methods to measure the per capita value of urban water scarcity by Detailed Analysis Unit (DAU) throughout California at projected population levels in the year 2020. The results show estimated scarcity values ranging between $5 and $20 per person in the Los Angeles region DAUs (in 1995 dollars). Scarcity values are measured as lost consumer surplus resulting from changes in quantity of water available for a given willingness-to-pay schedule and depend heavily on the estimated price elasticity of demand for urban water supplies.

Economic Analysis: Water Supply

LA area residents would be willing to pay between $5 and $20, in 1995 dollars, per person on average, at projected 2020 population levels, to avoid costs associated with water scarcity. Expressed in 2009 dollar values[3], these willingness-to-pay estimates range from $7 to $29 per person.

Project specific benefits for improved water supply reliability are not monetized for the purpose of the benefits calculation. An application of per capita scarcity values estimated by Jenkins et al (2001) were computed based on projected 2020 population levels, and therefore cannot be applied annually over the life of the Project.

The Project does not create an additional 450 AFY of water supplies, but shifts supply sources from regional (SWP) water to local sources (recycled water). As a result, quantifying residents' incremental willingness-to-pay to avoid water scarcity requires a probabilistic analysis to determine the relative improvement in supply reliability between the Project and without project sources. Such a study is outside the scope of this analysis.

Distribution of Project Benefits and Identification of Beneficiaries

The Project will benefit the City of Los Angeles through reduced water costs as well as the owners and patrons of Roosevelt Municipal Golf Course when these cost savings are realized and passed on in the form of reduced green fees (prices) for all users. Regionally, the Project will increase the availability of water supplies, improve water supply reliability and avoid effects of subsidence through potential future replenishment of the Raymond Basin benefits to both SWP and Raymond Basin users.

Statewide, this Project mitigates the declining conditions of the Bay-Delta Ecosystem through reduced water exports. The Project will shift to a local recycled water supply, which will benefit the State through more effective drought management and reduced demand for SWP water. A summary of beneficiaries is presented in Table 7.41.

Table 7.41: Project Beneficiaries Summary

Local	Regional	Statewide
City of Los Angeles and/or Patrons of Roosevelt Municipal Golf Course	SWP Customers; Residents of the Region	Bay-Delta Ecosystem, California Residents, California Water Regulatory and Management Agencies

Project Benefits Timeline Description

[3] Based on the Consumer Price Index for all urban consumers in the Los Angeles-Riverside-Orange County Metropolitan Statistical Area (MSA)

Economic Analysis: Water Supply

The Griffith Park Project will provide water supply benefits beginning in excess of the 46-year Project lifetime (2014-2060).

Uncertainty of Benefits

Projected savings from replacing imported water supply with recycled water represent best estimates based on the latest available data. Actual water savings will vary.

Table 7.42: Omissions, Biases, and Uncertainties and their Effect on the Project

Benefit or cost category	Likely impact on net benefits*	Comment
Avoided Imported Water Cost		
• Climate	+	Projected MWD water rates are driven by "normal year" expectations, whereas dry year conditions will add additional cost pressures (and may move some of the imported water to higher cost Tier 2 levels). Increasing effects of climate change, specifically with respect to global warming, may increase evaporation and evapotranspiration resulting in reduced water supplies and possibly higher water prices (holding demand constant). The future price of MWD water maybe understated as a result, and thus net benefits would likely increase.
• MWD Tier 1 Rate Assumption	-	The MWD Tier 1 untreated water price was used to quantify the avoided cost of imported water. Roosevelt Municipal Golf Course has historically purchased MWD Tier 2 untreated water, which is priced higher than MWD Tier 1 untreated water. Use of the MWD Tier 1 rate reduces net benefits.
• Regulatory/legal	+	Recent regulatory/ legal issues, specifically those surrounding the Bay-Delta ecosystem with respect to operation of the SWP, increase the likelihood that MWD surface water supplies will be reduced in the future even at existing demand levels. As a result, rates may increase at higher rates than experienced in the recent past.
• Increased water demands	+/-	Other SWP users may increase their demand, which may result in higher rates (holding supply constant). Population projections are forecasted based on a host of assumptions that, if incorrect, will result in uncertainty about actual future demand for California water.
• Expected Benefits for GWR Project	--	The cost of the Groundwater Replenishment Facilities Planning Study (GWR Study) is included in the initial Project costs, but the expected benefit

Economic Analysis: Water Supply

Benefit or cost category	Likely impact on net benefits*	Comment
		resulting from the Project, specifically the reduction in 2,700 AFY of non-potable imported water purchases, is not monetized. This omission may act to reduce overall net benefits, assuming the initial Project cost and O&M of the groundwater replenishment activities at the Raymond Basin are not greater than the monetized value of avoided imported water purchases.
Water Supply Reliability	+	The monetized value of added reliability is not included in the benefit-cost comparison. Adding the present value benefit of improved water into the overall benefit-cost analysis would increase net benefits.

** Direction and magnitude of effects on net benefits*

- *+ Likely to increase net benefits relative to quantified estimates*
- *++ Likely to increase net benefits significantly*
- *- Likely to decrease net benefits*
- *-- Likely to decrease net benefits significantly*
- *+/- Uncertain*

The "Without Project" Baseline

If this Project is not implemented, imported water will continue to be used for irrigation of the Roosevelt Municipal Golf Course and the GWR Study will not be conducted to determine the feasibility of storing up to 2,700 AFY of recycled water from the Los Angeles-Glendale Water Reclamation Plant (LAGWRP).

Potential Adverse Effects from the Project

Any potential short-term impacts associated with Project construction will be mitigated. No long-term adverse effects are expected as a result of the proposed Project.

Project Costs

The total estimated cost for the Project is $10,289,247. When operations and maintenance costs through 2060 are considered, the present value in 2009 dollars is $11,383,746. Capital and maintenance costs will be expended in 2010 through 2013, with the largest capital cost in construction and implementation. The operation and maintenance costs are estimated to be $191,800 in 2014. Detailed cost information associated with the Project, including present value calculations is presented in Appendix 7.H.

Economic Analysis: Water Supply

Table 7.43: Project Budget

		(a)	(b)	(c)	(d)	(e)
Budget Category		**Non-State Share* (Funding Match)**	**Requested Grant Funding**	**Other State Funds Being Used**	**Total**	**% Funding Match**
(a)	Direct Project Administration Costs	$441,056	$0	$0	$441,056	100%
(b)	Land Purchase/Easement	$0	$0	$0	$0	0%
(c)	Planning/Design/Engineering/ Environmental Documentation	$1,386,918	$7,000	$0	$1,393,918	100%
(d)	Construction/Implementation	$4,468,782	$2,793,000	$0	$7,261,782	62%
(e)	Environmental Compliance/ Mitigation/Enhancement	$0	$0	$0	$0	0%
(f)	Construction Administration	$158,790	$0	$0	$158,790	100%
(g)	Other Costs (Including Legal Costs, Permitting and Licenses)	$10,050	$0	$0	$10,050	100%
(h)	Construction/Implementation Contingency	$1,023,651	$0	$0	$1,023,651	100%
(i)	Grand Total (Sum rows (a) through (h) for each column)	**$7,489,247**	**$2,800,000**	**$0**	**$10,289,247**	**73%**

Project Benefit Costs Comparison

The total present value of the costs for the Project and monetized and qualitative benefits are provided in Table 7.44.

Table 7.44: Benefit-Cost Analysis Overview

	Present Value (In 2009 Dollars)
Costs – Total Capital and O&M	**$11,383,796**
Monetizable Benefits	
Water Supply Benefits (Avoided Costs of Imported Water)	$4,231,326
Total Benefits	**$4,231,326**
Qualitative Benefits	**Qualitative Indicator****
Water Supply Benefits (Avoided water imports - GWR)	++
Water Supply Benefits (Improved supply reliability)	+/-
Water Supply Benefits (Enhanced ecosystem habitat)	+/-
Other Benefits (Enhanced recreation)	+/-

Economic Analysis: Water Supply

	Present Value (In 2009 Dollars)
Other Benefits (Increased efficiency of the Los Angeles-Glendale Water Reclamation Plant Distribution System)	
** *Magnitude of effect on net benefits* *+/- (negligible or unknown)* *+ (moderate)* *++ (significant)*	

Methods used to Estimate With- and Without-Project Conditions

The annual cost of implementation of the Project is provided in Table 7.H.1 of Appendix 7.H. The lifetime of the Project is estimated to exceed 47 years. Operation and Maintenance costs for this analysis were obtained from LADWP Water Operation's staff from a similar Pump Station and Tank (details of the cost breakdowns are provided in Table 7.H.1 of Appendix 7.H).

The annual water supply benefits of implementing the Project are provided in Table 7.H.2 of Appendix 7.H. For this analysis, the avoided cost to purchase MWD Tier 2 untreated water makes up about 2.3% of LADWP's water supply (12,590 AFY of 547,000 AFY total supply). The Roosevelt Municipal Golf Course receives untreated MWD water for all but 2 weeks each year when it purchases treated water. The water supply benefits are not expected to begin until 2014.

The annual costs of avoided projects are provided in Table 7.H.3 of Appendix 7.H. There are no annual costs of avoided projects associated with implementation of this Project.

The annual other water supply benefits of the Project are provided in Table 7.H.4 of Appendix 7.H. There are no annual other water supply benefits associated with implementation of this Project.

The total water supply benefits for the Project are provided in Table 7.H.5 of Appendix 7.H. These benefits are provided through avoided potable water purchases and have a present value of $4,231,326.

X. Tujunga Spreading Grounds Enhancement

Water Supply Benefits

This Project will result in water supply benefits associated with avoided water supply purchases and improved water supply reliability (Table 7.45). The magnitude of benefits, monetized when possible, is reported in Table 7.49. Detailed cost and benefit information associated with the Project, including present value calculations, is presented in Appendix 7.I.

Table 7.45: Benefits Summary

Type of Benefit	Assessment Level	Beneficiaries
Avoided water supply purchases	Monetized	Local / Regional / Statewide
Improved water supply reliability	Qualitative	Local and Regional

Avoided Water Supply Purchases

This Project will generate water savings through avoided purchase of imported water supply. The Project will increase the capacity of the spreading grounds from 8,000 acre-feet per year (AFY) to 16,000 AFY, allowing for an increase of 8,000 AFY on average in the amount of stormwater captured and available for groundwater recharge. As a result, the Project will reduce costs by decreasing imported water purchases by approximately 8,000 AFY. Therefore these avoided costs due to water conservation over the life of the Project, from 2013 to 2060, have a present value benefit in 2009 dollars of approximately $78,771,729, assuming a 6% discount rate.

Improved Water Supply Reliability

The reliability of a water supply refers to the ability to meet water demands on a consistent basis, even in times of drought or other constraints on source water availability. This Project reduces imported water demand by increasing stormwater infiltration into the groundwater basin.

Although interest in water supply reliability is increasing, only a few studies have directly attempted to quantify its value. These studies indicate that residential and industrial (i.e., urban) customers seem to value supply reliability quite highly. Stated preference studies concluded that the annual value of water reliability ranged from $93 to $489 per household

(updated to 2009 dollars) for total reliability (i.e., a 0% probability of their water supply being interrupted in times of drought).

The challenge of using such information to determine the value of the Project is interpreting the survey-based household monetary values. The values noted above reflect a willingness-to-pay to ensure complete reliability (zero drought-related use restrictions in the future), whereas these integrated projects enhance only overall reliability, but do not guarantee 100% reliability. Thus, the dollar values from the studies will probably overstate the reliability value provided by the Project. One simple way to roughly adjust for this "whole versus part" problem is to attribute a portion of the total value of reliability to the portion of the project that is solved by the project.

Distribution of Project Benefits and Identification of Beneficiaries

This Project will reduce the water supply costs which will lower the water rates paid by local customers. The Project will also increase supplies available to the Metropolitan Water District of Southern California (MWD) customers and mitigate the declining conditions of the Bay-Delta Ecosystem through reduced water exports.

Table 7.46: Project Beneficiaries Summary

Local	Regional	Statewide
Local Water Customers	MWD Customers	Bay-Delta Ecosystem

Project Benefits Timeline Description

This Project will provide water supply benefits beginning in 2013 and continuing beyond the 50-year Project lifetime.

Uncertainty of Benefits

Projected savings through capture of stormwater represent best estimates based on the latest available data. Actual water savings will vary.

Table 7.47: Omissions, Biases, and Uncertainties and Their Effect on the Project

Benefit or cost category	Likely impact on net benefits*	Comment
Avoided Imported Water Cost		
• Water rate forecast (MWD)	+/-	Margin of error implicit in forecasting
• Climate	+	The projections also are driven by "normal year"

Economic Analysis: Water Supply

Benefit or cost category	Likely impact on net benefits*	Comment
		expectations, whereas dry year conditions will likely increase the cost of water and may move some of the imported water to higher cost Tier 2 levels.
• Regulatory/legal	+	Regulatory/ legal issues combine to make it more likely than not that the future availability of MWD-provided imported waters will be increasingly constrained and that costs will escalate at rates higher than experienced in the recent past.
• Increased water demands	+	Other SWP users may increase their demand which may result in higher rates (holding supply constant)
Water Supply Reliability	+	The monetized value of added reliability is not included in the benefit-cost comparison. If we had added the present value benefit of improved water supply reliability in the overall benefit-cost analysis, it would increase net benefits.

* *Direction and magnitude of effects on net benefits*

+ Likely to increase net benefits relative to quantified estimates

++ Likely to increase net benefits significantly

- Likely to decrease net benefits

-- Likely to decrease net benefits significantly

+/- Uncertain

The "Without Project" Baseline

If this Project is not implemented, the spreading grounds will not be expanded and the recharge capacity rate will not be increased to allow an additional 8,000 AFY of stormwater to infiltrate the groundwater basin. Therefore, 8,000 AFY of imported potable water will continue to be purchased which could be used for other water sources.

Potential Adverse Effects from the Project

Any potential short-term impacts associated with Project construction will be mitigated. No long-term adverse effects are expected as a result of the proposed Project.

Economic Analysis: Water Supply

Project Costs

The total estimated cost for the Project is $25,304,121. When operations and maintenance costs through 2060 are considered, the present value in 2009 dollars is $24,939,968. Capital and maintenance costs will be expended in 2013 and 2014, with the largest capital cost in construction and implementation. The operation and maintenance costs are estimated to be $253,517 in 2013. Detailed cost information associated with the Project, including present value calculations is presented in Appendix 7.I.

Table 7.48: Project Budget

		(a)	(b)	(c)	(d)	(e)
Budget Category		**Non-State Share* (Funding Match)**	**Requested Grant Funding**	**Other State Funds Being Used**	**Total**	**% Funding Match**
(a)	Direct Project Administration Costs	$26,776	$0	$0	$26,776	100%
(b)	Land Purchase/Easement	$0	$0	$0	$0	0%
(c)	Planning/Design/Engineering/ Environmental Documentation	$1,249,911	$0	$0	$1,249,911	100%
(d)	Construction/Implementation	$18,783,592	$4,383,656	$0	$23,167,248	81%
(e)	Environmental Compliance/ Mitigation/Enhancement	$60,000	$0	$0	$60,000	100%
(f)	Construction Administration	$570,186	$0	$0	$570,186	100%
(g)	Other Costs (Including Legal Costs, Permitting and Licenses)	$10,000	$0	$0	$10,000	100%
(h)	Construction/Implementation Contingency	$220,000	$0	$0	$220,000	100%
(i)	Grand Total (Sum rows (a) through (h) for each column)	**$20,920,465**	**$4,383,656**	**$0**	**$25,304,121**	**83%**

Economic Analysis: Water Supply

Project Benefit Costs Comparison

The total present value of the costs for the Project, along with monetized and qualitative benefits, is provided in Table 7.49.

Table 7.49: Benefit-Cost Analysis Overview

	Present Value (in 2009 dollars)
Costs – Total Capital and O&M	$24,939,968
Monetizable Benefits	
Water Supply Benefits	$78,771,729
Total Benefits	**$78,771,729**
Qualitative Benefits	**Qualitative Indicator****
Improved water supply reliability	+/-
Improved groundwater quality	+
Habitat enhancement and open space	+
Recreation	+
Community	+
Reduced Local Flooding	+

** *Magnitude of effect on net benefits*
+/- (negligible or unknown)
+ (moderate)
++ (significant)

Methods used to Estimate With- and Without-Project Conditions

The annual cost of implementation of the Project is provided in Table 7.I.1 of Appendix 7.I. The life of the Project is estimated to be 50 years. The current operations and maintenance agreement between LADWP and LACFCD (Agreement #10400) stipulates that the LACFCD will maintain and operate the spreading basin at no cost to LADWP. However, due to the proposed improvements to the facility, a new operation and maintenance agreement will be issued to address the added scope and dimension of the Project. Future O&M cost will be discussed with the LACFCD, as the proposed operator, once designs have been completed.

The annual water supply benefits of implementing the Project are provided in Table 7.I.2 of Appendix 7.I. For this analysis, the cost reflects the value of purchased MWD untreated water at Tier 1 rates. The additional captured volume of 8,000 AFY is not expected to deviate significantly over the 50-year life of the Project.

Economic Analysis: Water Supply

The annual costs of avoided projects are provided in Table 7.I.3 of Appendix 7.I. There are no annual costs of avoided projects associated with implementation of this Project.

The annual other water supply benefits of the Project are provided in Table 7.I.4 of Appendix 7.I. There are no annual other water supply benefits associated with implementation of this Project.

The total water supply benefits for the Project are provided in Table 7.I.5 of Appendix 7.I. These benefits are provided through avoided potable water purchases and have a present value of $78,771,729.

XI. San Antonio Spreading Grounds Improvements

Water Supply Benefits

This Project will result in water supply benefits associated with avoided water supply purchases, specifically reduced purchase of treated imported water through the spreading of untreated imported water at the San Antonio Spreading Grounds (summarized in Table 7.50). The water stored in the local aquifer through this process will allow for greater local supply reliability. The magnitude of benefits, monetized when possible, is reported in Table 7.54. Detailed cost and benefit information associated with the Project, including present value calculations, are presented in Appendix 7.J.

Table 7.50: Benefits Summary

Type of Benefit	Assessment Level	Beneficiaries
Decreased water supply costs	Monetized	Local / Regional
Improved water supply reliability	Qualitative	Local / Regional

Avoided Water Supply Purchases

This Project is expected to reduce water purchase costs based on the differential between MWD wholesale rates for Tier 1 treated and untreated water, which are expected to escalate over time. These savings have a present value benefit in 2009 dollars of approximately $36,937,911, assuming a 6% discount rate. It is assumed that 8,250 AF of MWD surplus water will be available each year throughout the Project life. The benefit analysis only considers water the completed facility would be able to deliver to the San Antonio Spreading Grounds.

Economic Analysis: Water Supply

Improved Water Supply Reliability

The reliability of a water supply refers to the ability to meet water demands on a consistent basis, even in times of drought or other constraints on source water availability. This Project provides for improved supply reliability through the storage of untreated imported water into the local groundwater basin.

Although interest in water supply reliability is increasing, only a few studies have directly attempted to quantify its value. These studies indicate that residential and industrial (i.e., urban) customers seem to value supply reliability quite highly. Stated preference studies concluded that the annual value of water reliability ranged from $93 to $489 per household (updated to 2009 dollars) for total reliability (i.e., a 0% probability of their water supply being interrupted in times of drought).

The challenge of using such information to determine the value of the Project is interpreting the survey-based household monetary values. The values noted above reflect a willingness-to-pay to ensure complete reliability (zero drought-related use restrictions in the future), whereas these integrated projects enhance only overall reliability, but do not guarantee 100% reliability. Thus, the dollar values from the studies will probably overstate the reliability value provided by the Project. One simple way to roughly adjust for this "whole versus part" problem is to attribute a portion of the total value of reliability to the portion of the problem that is solved by the project.

Distribution of Project Benefits and Identification of Beneficiaries

This Project will benefit the local San Gabriel Valley water users by reducing imported water costs and increasing water supply reliability (Table 7.51). Additional spreading capacity reduces the overall water cost of recharge water, with cost savings passed on to local customers through water rates.

Table 7.51: Project Beneficiaries Summary

Local	Regional	Statewide
San Gabriel Valley water users	*Not applicable*	*Not applicable*

Economic Analysis: Water Supply

Project Benefits Timeline Description

This Project will provide water supply benefits in excess of the 50-year Project lifetime (2011-2060).

Uncertainty of Benefits

Projected savings through recharge of untreated imported water represent best estimates based on the latest available data. Actual water savings will vary.

Table 7.52: Omissions, Biases, and Uncertainties and their Effect on the Project

Benefit or cost category	Likely impact on net benefits**	Comment
Reduced Imported Water Cost		
• Water rate forecast (MWD)	+/-	Margin of error implicit in forecasting
• Climate	+	The projections also are driven by "normal year" expectations, whereas dry year conditions will add additional cost pressures (and may move some of the imported water to higher cost Tier 2 levels).
• Regulatory/legal	+	Regulatory/ legal issues combine to make it more likely than not that the future availability of MWD-provided imported waters will be increasingly constrained, and that costs will escalate at rates higher than experienced in the recent past.
• Increased water demands	+	Other regional users may increase their demand and may result in higher rates (holding supply constant)
• Availability of surplus water	-	A full 8,250 AF of untreated surplus water may not be available each year
Water Supply Reliability	+	The monetized value of added reliability is not included in the benefit-cost comparison. If we had added the present value benefit of improved water supply reliability in the overall benefit-cost analysis, it would increase net benefits.

** *Direction and magnitude of effects on net benefits*

\+ *Likely to increase net benefits relative to quantified estimates*

++ *Likely to increase net benefits significantly*

Economic Analysis: Water Supply

Benefit or cost category	Likely impact on net benefits**	Comment
- *Likely to decrease net benefits* -- *Likely to decrease net benefits significantly* +/- *Uncertain*		

The "Without Project" Baseline

If this Project is not implemented, the region will not be able to recharge the excess untreated MWD water of up to 8,250 AFY in the San Antonio Spreading Grounds.

Potential Adverse Effects from the Project

Any potential short-term impacts associated with Project construction will be mitigated. No long-term adverse effects are expected as a result of the proposed Project.

Project Costs

The total estimated cost for the Project is $4,999,800. When operations and maintenance costs through 2060 are considered, the present value in 2009 dollars is $4,279,286. Capital costs will be expended in 2011 through 2013, with the largest capital cost in construction and implementation. The operation and maintenance costs are estimated to be $11,088 in 2011. Detailed cost information associated with the Project, including present value calculations is presented in Appendix x-2.

Table 7.53: Project Budget

		(a)	(b)	(c)	(d)	(e)
Budget Category		Non-State Share* (Funding Match)	Requested Grant Funding	Other State Funds Being Used	Total	% Funding Match
(a)	Direct Project Administration Costs	$45,823	$30,549	$0	$76,372	60%
(b)	Land Purchase/Easement	$0	$0	$0	$0	0%
(c)	Planning/Design/Engineering/	$61,063	$28,142	$0	$89,205	68%

Economic Analysis: Water Supply

	Budget Category	(a) Non-State Share* (Funding Match)	(b) Requested Grant Funding	(c) Other State Funds Being Used	(d) Total	(e) % Funding Match
	Environmental Documentation					
(d)	Construction/Implementation	$738,596	$3,513,896	$0	$4,252,492	33%
(e)	Environmental Compliance/ Mitigation/Enhancement	$17,291	$1,344	$0	$18,635	93%
(f)	Construction Administration	$34,258	$22,838	$0	$57,096	60%
(g)	Other Costs (Including Legal Costs, Permitting and Licenses)	$3,600	$2,400	$0	$6,000	60%
(h)	Construction/Implementation Contingency	$300,000	$200,000	$0	$500,000	60%
(i)	**Grand Total** (Sum rows (a) through (h) for each column)	**$1,200,631**	**$3,799,169**	**$0**	**$4,999,800**	**37%**

Project Benefit Costs Comparison

The total present value of the costs for the Project, along with monetized and qualitative benefits, is provided in Table 7.54.

Table 7.54: Benefit-Cost Analysis Overview

	Present Value (In 2009 Dollars)
Costs – Total Capital and O&M	$4,279,286
Monetizable Benefits	
Water Supply Benefits	$32,306,146
Total Benefits	**$**32,306,146
Qualitative Benefits	**Qualitative Indicator***
Improved water supply reliability	++
Reduction in nitrate levels through blending	+

Economic Analysis: Water Supply

	Present Value (In 2009 Dollars)
Habitat preservation	+

* *Magnitude of effect on net benefits*

+/- (negligible or unknown)

+ (moderate)

++ (significant)

Methods used to Estimate With- and Without-Project Conditions

The annual cost of implementation of the Project is provided in Table 7.J.1 of Appendix 7.J. The life of the Project is estimated to be 50 years. The values used for this analysis were derived from the Project's Preliminary Design Report (see Appendix J.3 for Preliminary Design Report).

The annual water supply benefits of implementing the Project are provided in Table 7.J.2 of Appendix 7.J. For this analysis, MWD Tier I treated rates and MWD untreated rates were used for the value of the water.

The annual costs of avoided projects are provided in Table 7.J.3 of Appendix 7.J. There are no annual costs of avoided projects associated with implementation of this Project. The annual other water supply benefits of the Project are provided in Table 7.J.4 of Appendix 7.J. There are no annual other water supply benefits associated with implementation of this Project.

The annual total water supply benefits for the Project are provided in Table 7.J.5 of Appendix 7.J. These benefits are provided through avoided potable water purchases and have a present value of $36,937,911.

XII. Leo J Vander Lans Advanced Treatment Plant Expansion

Water Supply Benefits

This Project will result in water supply benefits associated with avoided water supply purchases, specifically through the injection of highly treated recycled water into the groundwater basin (Table 7.55). The water stored in the local aquifer through this process will allow for greater local supply reliability. The magnitude of benefits, monetized when possible, is reported in Table x.5. Detailed cost and benefit information associated with the Project, including present value calculations, is presented in Appendix 7.K.

Economic Analysis: Water Supply

Table 7.55: Benefits Summary

Type of Benefit	Assessment Level	Beneficiaries
Avoided water supply purchases	Monetized	Local / Regional / Statewide
Improved water supply reliability	Qualitative	Local / Regional

Avoided Water Supply Purchases

This Project is expected to reduce water purchase costs based on the differential between MWD wholesale rates for Tier 1 treated and untreated water, which are expected to escalate over time. These savings have a present value benefit in 2009 dollars of approximately $45,285,312, assuming a 6% discount rate. It is assumed that 4,000 AFY of MWD water will be available each year throughout the Project life. The benefit analysis only considers water the completed facility will be able to deliver.

Improved Water Supply Reliability

The reliability of a water supply refers to the ability to meet water demands on a consistent basis, even in times of drought or other constraints on source water availability. This Project improves supply reliability through water storage and recharge into the groundwater basin.

Although interest in water supply reliability is increasing, only a few studies have directly attempted to quantify its value. These studies indicate that residential and industrial (i.e., urban) customers seem to value supply reliability quite highly. Stated preference studies concluded that the annual value of water reliability ranged from $93 to $489 per household (updated to 2009 dollars) for total reliability (i.e., a 0% probability of their water supply being interrupted in times of drought).

The challenge of using such information to determine the value of the Project is interpreting the survey-based household monetary values. The values noted above reflect a willingness-to-pay to ensure complete reliability (zero drought-related use restrictions in the future), whereas these integrated projects enhance only overall reliability, but do not guarantee 100% reliability. Thus, the dollar values from the studies will probably overstate the reliability value provided by the Project. One simple way to roughly adjust for this “whole versus part” problem is to attribute a portion of the total value of reliability to the portion of the problem that is solved by the project.

Economic Analysis: Water Supply

Distribution of Project Benefits and Identification of Beneficiaries

The following table (Table 7.56) summarizes the Project's beneficiaries.

This Project will benefit the local water users by reducing imported water cost and increasing water supply reliability. The Project will also keep current supplies available to regional MWD water users and mitigate the declining ecosystem conditions of the Bay-Delta Ecosystem through reduced water exports.

Table 7.56: Project Beneficiaries Summary

Local	Regional	Statewide
Local water customers	MWD customers	Bay-Delta Ecosystem

Project Benefits Timeline Description

This Project would provide water supply benefits for 30 years (2014-2043).

Uncertainty of Benefits

Projected savings through recharge of untreated imported water represent best estimates based on the latest available data. Actual water savings will vary.

Table 7.57: Omissions, Biases, and Uncertainties and their Effect on the Project

Benefit or cost category	Likely impact on net benefits**	Comment
Avoided Imported Water Cost		
• Water rate forecast (MWD)	+/-	Margin of error implicit in forecasting
• Climate	+	The projections also are driven by "normal year" expectations, whereas dry year conditions will add additional cost pressures (and may move some of the imported water to higher cost Tier 2 levels).
• Regulatory/legal	+	Regulatory/ legal issues combine to make it more likely than not that the future availability of MWD-provided imported waters will be increasingly constrained, and that costs will escalate at rates higher than experienced in the recent past.
• Increased water demands	+	Other MWD users may increase their demand and may result in higher rates (holding supply constant)
Water Supply Reliability	++	The monetized value of added reliability is not

Economic Analysis: Water Supply

Benefit or cost category	Likely impact on net benefits**	Comment
		included in the benefit-cost comparison. If we had added the present value benefit of improved water supply reliability in the overall benefit-cost analysis, it would increase net benefits significantly.

** Direction and magnitude of effects on net benefits

+ Likely to increase net benefits relative to quantified estimates

++ Likely to increase net benefits significantly

- Likely to decrease net benefits

-- Likely to decrease net benefits significantly

+/- Uncertain

The "Without Project" Baseline

If this Project is not implemented, MWD wholesale Tier 1 treated water will continue to be purchased.

Potential Adverse Effects from the Project

Any potential short-term impacts associated with Project construction will be mitigated. No long-term adverse effects are expected as a result of the proposed Project.

Project Costs

The total estimated cost for the Project is $29,165,262. When operations and maintenance costs through 2043 are considered, the present value in 2009 dollars is $54,232,760. Capital costs will be expended from 2011 to 2013, with the largest capital cost in construction and implementation. The operation and maintenance costs are estimated to be $2,094,300 in 2014. Detailed cost information associated with the Project, including present value calculations is presented in Table 7.K.1 of Appendix 7.K.

Table 7.58: Project Budget

		(a)	(b)	(c)	(d)	(e)
Budget Category		Non-State Share* (Funding Match)	Requested Grant Funding	Other State Funds Being Used	Total	% Funding Match
(a)	Direct Project Administration Costs	$484,050	$0	$0	$484,050	100%

Economic Analysis: Water Supply

Budget Category		(a) Non-State Share* (Funding Match)	(b) Requested Grant Funding	(c) Other State Funds Being Used	(d) Total	(e) % Funding Match
(b)	Land Purchase/Easement	$0	$0	$0	$0	0%
(c)	Planning/Design/Engineering/ Environmental Documentation	$2,905,000	$0	$0	$2,905,000	100%
(d)	Construction/Implementation	$19,258,541	$4,944,459	$0	$24,203,000	80%
(e)	Environmental Compliance/ Mitigation/Enhancement	$0	$0	$0	$0	0%
(f)	Construction Administration	$1,452,200	$0	$0	$1,452,200	100%
(g)	Other Costs (Including Legal Costs, Permitting and Licenses)	$121,012	$0	$0	$121,012	100%
(h)	Construction/Implementation Contingency	$0	$0	$0	$0	0%
(i)	Grand Total (Sum rows (a) through (h) for each column)	**$24,220,803**	**$4,944,459**	**$0**	**$29,165,262**	**83%**

Project Benefit Costs Comparison

The total present value of the costs for the Project, along with monetized and qualitative benefits, is provided in Table 7.59.

Table 7.59: Benefit-Cost Analysis Overview

	Present Value (In 2009 Dollars)
Costs – Total Capital and O&M	$54,232,760
Monetizable Benefits	
Water Supply Benefits	$45,285,312
Total Benefits	**$45,285,312**
Qualitative Benefits	**Qualitative Indicator***
Improved water supply reliability	++
Reduction in nitrate levels through blending	+
Habitat preservation	+
* *Magnitude of effect on net benefits*	

	Present Value (In 2009 Dollars)
+/- (negligible or unknown)	
+ (moderate)	
++ (significant)	

Methods used to Estimate With- and Without-Project Conditions

The annual cost of implementation of the Project is provided in Table 7.K.1 of Appendix 7.K. The life of the Project is estimated to be 30 years.

The annual water supply benefits of implementing the Project are provided in Table 7.K.2 of Appendix 7.K. For this analysis, MWD Tier I treated rates and MWD untreated rates were used for the value of the water.

The annual costs of avoided projects are provided in Table 7.K.3 of Appendix 7.K. There are no annual costs of avoided projects associated with implementation of this Project.

The annual other water supply benefits of the Project are provided in Table 7.K.4 of Appendix 7.K. There are no annual other water supply benefits associated with implementation of this Project.

The total water supply benefits for the Project are provided in Table 7.K.5 of Appendix 7.K. These benefits are provided through avoided potable water purchases and have a present value of $45,285,312.

XIII. Whittier Narrows Conservation Pool Project

Water Supply Benefits

The Project will result in water supply benefits associated with avoided water supply purchases, specifically reduced purchase of imported water for spreading (summarized in Table 7.60). The water stored through this Project would allow for recharge of the local aquifer that will provide greater local water supply reliability. The magnitude of benefits, monetized when possible, is reported in Table 7.64. Detailed cost and benefit information associated with the Project, including present value calculations, is presented in Appendix 7.L.

Economic Analysis: Water Supply

Table 7.60: Benefits Summary

Type of Benefit	Assessment Level	Beneficiaries
Avoided water supply purchases	Monetized	Local / Regional / Statewide
Improved water supply reliability	Qualitative	Local / Regional / Statewide

Avoided Water Supply Purchases

The Water Replenishment District of Southern California (WRD) is charged with spreading and injecting water into the ground to maintain sufficient supplies of high-quality groundwater in the Central Basin, one of many basins in the Los Angeles area. Historically, this has been accomplished by capturing storm water and snow-melt, as well as purchasing untreated replenishment water supplies from the Metropolitan Water District of Southern California (MWD). The Project will develop a new, sustainable and drought-resistant supply for groundwater recharge into the Central Basin. Specifically, the maximum pool level behind Whittier Narrows Dam (Dam) will be increased from 201.6-ft to 205-ft, equivalent to an additional conservation pool volume of 1,200 AF.

The increase in storage capacity at the Dam is expected to capture 1,100 AFY of storm water, which will recharge the Central Basin via the Rio Hondo and San Gabriel Coastal Spreading Grounds behind the Dam. This potential supply produced by the Project accounts for approximately 5% of WRD's anticipated imported water purchases for spreading during 2010-2011 (WRD 2010 Engineering Survey and Report, Tables 1 and 7). The WRD expects this potential supply to replace annual purchases of replenishment and untreated Tier 1 water from MWD by 1,100 AFY between 2015 and 2060. Avoided cost of imported water purchases is quantified using projected annual water rates for MWD untreated Tier 1 water. Reduced WRD cost for groundwater recharge may lower its assessment, a potential benefit to local and regional residents.

Improved Water Supply Reliability

The reliability of a water supply refers to the ability to meet water demands on a consistent basis, even in times of drought or other constraints on source water availability. The Project does not create additional water supplies, but shifts supply sources from regional (SWP) water to local surface water. As a result, quantifying residents' incremental willingness-to-pay to avoid water scarcity requires a probabilistic analysis to determine the relative improvement in

supply reliability between the Project and without project sources. Such a study is outside the scope of this analysis.

Reducing the demand for water from the SWP by using more local supply will benefit California residents and state and local government agencies involved in water management in preparing for drought years by reducing uncertainty about demand for SWP supplies. Other SWP users will benefit from increased supply reliability, including, but not limited to, other Southern California municipal water users depending on the availability of supplies from MWD. Studies have shown municipal water users throughout California are willing to pay in order to avoid water shortages and reduce water scarcity.

Although interest in water supply reliability is increasing, only a few studies have directly attempted to quantify its value. These studies indicate that residential and industrial (i.e., urban) customers seem to value supply reliability quite highly. Stated preference studies concluded that the annual value of water reliability ranged from $93 to $489 per household (updated to 2009 dollars) for total reliability (i.e., a 0% probability of their water supply being interrupted in times of drought).

The challenge of using such information to determine the value of the Project is interpreting the survey-based household monetary values. The values noted above reflect a willingness-to-pay to ensure complete reliability (zero drought-related use restrictions in the future), whereas these integrated projects enhance only overall reliability, but do not guarantee 100% reliability. Thus, the dollar values from the studies will probably overstate the reliability value provided by the Project. One simple way to roughly adjust for this "whole versus part" problem is to attribute a portion of the total value of reliability to the portion of the project that is solved by the project.

Distribution of Project Benefits and Identification of Beneficiaries

The Project will benefit regional SWP customers through increased availability of supplies (Table x.2). Residents of the region will benefit from overall increases in water supply reliability. WRD will reduce its reliance on MWD water supplies for replenishment and increase the probability of meeting its objective of maintaining ample groundwater supplies. Reductions in WRD's operating costs will reduce the assessment it levies and local and regional citizens will benefit.

On a statewide level, reducing imported water purchased will allow California government agencies to more effectively manage future statewide droughts because the Los Angeles region has increased use of local surface water and reduced its demand for SWP water. California citizens also benefit as water rationing (in drought years) will be less likely.

Economic Analysis: Water Supply

Table 7.61: Project Beneficiaries Summary

Local	Regional	Statewide
WRD Customers and Local Residents	SWP Customers; Residents of the Region	California Residents, California Water Regulatory and Management Agencies

Project Benefits Timeline Description

This Project will provide water supply benefits in excess of the 50-year Project lifetime (2011-2060).

Uncertainty of Benefits

Projected savings associated with using local surface water for recharge as opposed to imported water represent best estimates based on the latest available data. Actual water savings will vary.

Table 7.62: Omissions, Biases, and Uncertainties and their Effect on the Project

Benefit or cost category	Likely impact on net benefits*	Comment
Avoided Imported Water Cost		
• Climate	+/-	Projected MWD water rates are driven by "normal year" expectations, whereas dry year conditions will add additional cost pressures (and may move some of the imported water to higher cost Tier 2 levels). Increasing effects of climate change, specifically with respect to global warming, may increase evaporation and evapotranspiration resulting in reduced water supplies and possibly higher water prices (holding demand constant). The future price of MWD water maybe understated as a result, and thus net benefits would likely increase. If climate change reduces average local rainfall, the amount of storm water the Project can capture and use to recharge the basin may be reduced, thus partially offsetting avoided water purchases.
• MWD Replenishment Rate Assumption	+	According to WRD's 2010 Engineering Survey and Report, surplus replenishment water supplies from MWD have been increasingly unavailable and the trend is expected to continue. As a result, the WRD expects that it will have to purchase untreated Tier 1

Economic Analysis: Water Supply

Benefit or cost category	Likely impact on net benefits*	Comment
		water for spreading during 2010-2011. Untreated Tier 1 water is priced approximately 30% higher than untreated replenishment water available from MWD. This acts to understate net benefits.
• Regulatory/legal	+	Recent regulatory/ legal issues, specifically those surrounding the Bay-Delta ecosystem with respect to operation of the SWP, increase the likelihood that MWD surface water supplies will be reduced in the future even at existing demand levels. As a result, rates may increase at higher rates than experienced in the recent past.
• Increased water demands	+/-	Other SWP users may increase their demand, which may result in higher rates (holding supply constant). Population projections are forecasted based on a host of assumptions that, if incorrect, will result in uncertainty about actual future demand for California water.
Water Supply Reliability	+	The monetized value of added reliability is not included in the benefit-cost comparison. Adding the present value benefit of improved water reliability into the overall benefit-cost analysis would increase net benefits.

** Direction and magnitude of effects on net benefits*

+ Likely to increase net benefits relative to quantified estimates
++ Likely to increase net benefits significantly
- Likely to decrease net benefits
-- Likely to decrease net benefits significantly
+/- Uncertain

The "Without Project" Baseline

If this Project is not implemented, 1,100 AFY of imported water will continue to be purchased for groundwater recharge.

Potential Adverse Effects from the Project

Any potential short-term impacts associated with Project implementation will be mitigated. No long-term adverse effects are expected as a result of the proposed Project.

Project Costs

The total estimated cost for the Project is $1,701,505. When operations and maintenance costs through 2060 are considered, the present in 2009 dollars is $4,412,611. Capital costs will be

expended in 2011 through 2014. The operation and maintenance costs are estimated to be $257,200 in 2015. Detailed cost information associated with the Project, including present value calculations, is presented in Appendix 7.L. Operational costs include the cost of a dam tender when water is held behind the dam and additional operational costs at the adjacent reclamation plant during storm events. Maintenance costs include clean-up costs for inundation area. Other costs include recreational costs (loss of use) and environmental mitigation (biological mitigation and monitoring and wildlife monitoring).

Table 7.63: Project Budget

		(a)	(b)	(c)	(d)	(e)
Budget Category		**Non-State Share* (Funding Match)**	**Requested Grant Funding**	**Other State Funds Being Used**	**Total**	**% Funding Match**
(a)	Direct Project Administration Costs	$25,200	$0	$0	$25,200	100%
(b)	Land Purchase/Easement	$0	$0	$0	$0	0%
(c)	Planning/Design/Engineering/ Environmental Documentation	$1,100,305	$576,000	$0	$1,676,305	66%
(d)	Construction/Implementation	$0	$0	$0	$0	0%
(e)	Environmental Compliance/ Mitigation/Enhancement	$0	$0	$0	$0	0%
(f)	Construction Administration	$0	$0	$0	$0	0%
(g)	Other Costs (Including Legal Costs, Permitting and Licenses)	$0	$0	$0	$0	0%
(h)	Construction/Implementation Contingency	$0	$0	$0	$0	0%
(i)	Grand Total (Sum rows (a) through (h) for each column)	**$1,125,505**	**$576,000**	**$0**	**$1,701,505**	**66%**

Project Benefit Costs Comparison

Economic Analysis: Water Supply

The total present value of the costs for the Project and monetized and qualitative benefits are provided in Table 7.64.

Table 7.64: Benefit-Cost Analysis Overview

	Present Value (in 2009 dollars)
Costs – Total Capital and O&M	$4,412,611
Monetizable Benefits Water Supply Benefits (Avoided water supply purchases) **Total Benefits**	$7,781,351 **$7,781,351**
Qualitative Benefits Water Supply Benefits (Improved supply reliability) Other (Enhanced ecosystem habitat) Other (Enhanced beach recreation) Other (Avoided public health costs) Reduced Local and Regional Flooding	**Qualitative Indicator**** + + +/- +/-+ +
** *Magnitude of effect on net benefits* *+/- (negligible or unknown)* *+ (moderate)* *++ (significant)*	

Methods used to Estimate With- and Without-Project Conditions

The annual cost of implementation of the Project is provided in Table 7.x.6 of Appendix x.2. The life of the Project is estimated to be 50 years. The values used for this analysis were derived from the 2000 Los Angeles County Drainage Area (LACDA) Water Conservation and Supply Santa Fe – Whittier Narrows Dams Feasibility Study (Feasibility Study) (see Appendix x-x for Feasibility Study).

The annual water supply benefits of implementing the Project are provided in Table 7.L.1 of Appendix 7.L. For this analysis, MWD replenishment rates were used for the value of the water.

The annual costs of avoided projects are provided in Table 7.L.2 of Appendix 7.L. There are no annual costs of avoided projects associated with implementation of this Project.

The annual other water supply benefits of the Project are provided in Table 7.L.3 of Appendix 7.L. There are no annual other water supply benefits associated with implementation of this Project.

Economic Analysis: Water Supply

The total water supply benefits for the Project are provided in Table 7.L.4 of Appendix 7.L. These benefits are provided through avoided potable water purchases and have a present value of $7,781,351.

XIV. Water and Energy Efficiency in the School and Hotel/Motel Sectors

Water Supply Benefits

The Program will result in water supply benefits associated with avoided water supply purchases and improve water supply reliability (Table 7.65). The magnitude of benefits, monetized when possible, is reported in Table 7.69. Detailed cost and benefit information associated with the Program, including present value calculations, is presented in Appendix 7.M.

Table 7.65: Benefits Summary

Type of Benefit	Assessment Level	Beneficiaries
Avoided Cost of Imported Water	Monetized	Local/Regional/Statewide
Improved Water Supply Reliability	Qualitative	Local/Regional

Avoided Cost of Imported Water

The Program is expected to generate water savings through avoided purchase of imported water supply. This Project will conserve an estimated 85 acre-feet per year (AFY). This total is based on the estimated savings per device. Full water supply benefits will begin in 2012 and extend through 2030, at which point the first devices are at the end of their useful life and the water supply benefits will proportionally decline until 2060. The avoided purchase costs of water conserved through 2060 has a present value benefit in 2009 dollars of approximately $1,028,177 assuming a 6% discount rate.

Improved Water Supply Reliability

The reliability of a water supply refers to the ability to meet water demands on a consistent basis, even in times of drought or other constraints on source water availability. This Program provides for imported water conservation and reduces imported water demand.

Economic Analysis: Water Supply

Although interest in water supply reliability is increasing, only a few studies have directly attempted to quantify its value. These studies indicate that residential and industrial (i.e., urban) customers seem to value supply reliability quite highly. Stated preference studies concluded that the annual value of water reliability ranged from $93 to $489 per household (updated to 2009 dollars) for total reliability (i.e., a 0% probability of their water supply being interrupted in times of drought).

The challenge of using such information to determine the value of the Program is interpreting the survey-based household monetary values. The values noted above reflect a willingness-to-pay to ensure complete reliability (zero drought-related use restrictions in the future), whereas these integrated projects enhance only overall reliability, but do not guarantee 100% reliability. Thus, the dollar values from the studies will probably overstate the reliability value provided by the Program. One simple way to roughly adjust for this "whole versus part" problem is to attribute a portion of the total value of reliability to the portion of the project that is solved by the project.

Distribution of Project Benefits and Identification of Beneficiaries

The Program will reduce water and energy use and expenses, making funds available for other requirements (Table 7.66). The Program will increase supplies available to MWD customers. It will also improve the quality of the beaches as the leachate will not travel to the ocean. by reducing septic system leachate flows in the Project area. This Program will mitigate the declining conditions of the Bay-Delta Ecosystem through reduced water exports.

Table 7.66: Project Beneficiaries Summary

Local	Regional	Statewide
Schools and Hotels/Motels, Local Visitors to Area Beaches	SWP Customers, Regional Visitors to Area Beaches	Bay Delta Ecosystem, Statewide Visitors to Area Beaches

Project Benefits Timeline Description

This Program will provide water supply benefits beginning in 2012. Full water supply benefits begin in 2012 and extend through 2030, when the first devices installed reach the end of their life. After 2030, the water supply benefits will proportionally decline until 2060.

Uncertainty of Benefits

Projected savings through the installation of smart irrigation controllers represent best estimates based on the latest available data (Table 7.67). Actual water savings will vary.

Economic Analysis: Water Supply

Table 7.67: Omissions, Biases, and Uncertainties and their Effect on the Project

Benefit or cost category	Likely impact on net benefits*	Comment
Water Supply (Avoided Water Costs)		
• Water rate forecast (MWD)	+/-	Margin of error implicit in forecasting
• Climate	+	The projections also are driven by "normal year" expectations, whereas dry year conditions will add additional cost pressures (and may move some of the imported water to higher cost Tier 2 levels).
• Regulatory/legal	+	Regulatory/ legal issues combine to make it more likely than not that the future availability of MWD-provided imported waters will be increasingly constrained, and that costs will escalate at rates higher than experienced in the recent past.
• Increased water demands	+	Other MWD users may increase their demand which may result in higher rates (holding supply constant)
• Schools, hotels, and motels may not participate fully in program	-	As a voluntary program, if schools, hotels and motels do not participate, the benefits would be overstated
Water Supply Reliability	+	The monetized value of added reliability is not included in the benefit-cost comparison. If we had added the present value benefit of improved water supply reliability in the overall benefit-cost analysis, it would increase net benefits.

* *Direction and magnitude of effects on net benefits*
- *+ Likely to increase net benefits relative to quantified estimates*
- *++ Likely to increase net benefits significantly*
- *- Likely to decrease net benefits*
- *-- Likely to decrease net benefits significantly*
- *+/- Uncertain*

Economic Analysis: Water Supply

The "Without Project" Baseline

If this Program is not implemented, imported potable water will continue to be used at the current rates and water savings will not be realized.

Potential Adverse Effects from the Project

No potentially adverse effects are anticipated from this Program.

Project Costs

The total estimated cost for the Program is $566,100. Since there is no administration, operations, maintenance, or replacement costs for this Program, the initial Program cost alone has a present value in 2009 dollars of $475,660. Capital costs will be expended from 2011 through 2013, with the largest capital cost being Program implementation (Table 7.68). Detailed cost information associated with the Program, including present value calculations, is presented in Appendix 7.M.

Table 7.68: Project Budget

		(a)	(b)	(c)	(d)	(e)
Budget Category		**Non-State Share* (Funding Match)**	**Requested Grant Funding**	**Other State Funds Being Used**	**Total**	**% Funding Match**
(a)	Direct Project Administration Costs	$20,000	$0	$0	$20,000	100%
(b)	Land Purchase/Easement	$0	$0	$0	$0	0%
(c)	Planning/Design/Engineering/ Environmental Documentation	$0	$0	$0	$0	0%
(d)	Construction/Implementation	$92,220	$434,880	$0	$527,100	17%
(e)	Environmental Compliance/ Mitigation/Enhancement	$0	$0	$0	$0	0%
(f)	Construction Administration	$0	$18,000	$0	$18,000	0%

Economic Analysis: Water Supply

Budget Category		(a) Non-State Share* (Funding Match)	(b) Requested Grant Funding	(c) Other State Funds Being Used	(d) Total	(e) % Funding Match
(g)	Other Costs (Including Legal Costs, Permitting and Licenses)	$1,000	$0	$0	$1,000	100%
(h)	Construction/Implementation Contingency	$0	$0	$0	$0	0%
(i)	Grand Total (Sum rows (a) through (h) for each column)	**$113,220**	**$452,880**	**$0**	**$566,100**	**20%**

Note: Costs shown include those incurred in 2009 and 2010.

Project Benefit Costs Comparison

The total present value of the costs for the Program, along with monetized and qualitative benefits, is provided in Table 7.69.

Table 7.69: Benefit-Cost Analysis Overview

	Present Value (In 2009 Dollars)
Costs – Total Capital and O&M	**$475,660**
Monetizable Benefits	
Water Supply Benefits	$1,028,177
Other Benefits (avoided power costs)	$2,035,009
Total Benefits	**$3,063,186**
Qualitative Benefits	**Qualitative Indicator***
Improved water supply reliability	+/-
Reduced flow to sanitary sewers by installation of water efficient devices	+/-
Reduced dry weather runoff by use of smart irrigation controllers	+/-

* *Magnitude of effect on net benefits*
+/- (negligible or unknown)
+ (moderate)
++ (significant)

Economic Analysis: Water Supply

Methods used to Estimate With- and Without-Project Conditions

The annual cost of implementation of the Program is provided in Table 7.M.1 of Appendix 7.M. The life of the Program is estimated to be 50 years.

The annual water supply benefits of implementing the Program are provided in Table 7.M.2 of Appendix 7.M. For this analysis, MWD Tier I treated rates were used for the value of the water.

The annual costs of avoided projects are provided in Table 7.M.3 of Appendix 7.M. There are no annual costs of avoided projects associated with implementation of this Program.

The annual other water supply benefits of the Program are provided in Table 7.M.4 of Appendix 7.M. There are no annual other water supply benefits associated with implementation of this Program.

The total water supply benefits for the Program are provided in Table 7.M.5 of Appendix 7.M. These benefits are provided through avoided potable water purchases and have a present value of $1,028,177.

APPENDIX A

Hahamongna Basin Multi-Use Project –

Arroyo Seco Foundation

Table 7.A.1 - Annual Cost of Project
(All costs should be in 2009 dollars)
Project: Hahamonga Basin Multi-Use Project

	Initial Costs	Operations and Maintenance Costs						Discounting Calculations	
Year	(a) Grand Total Cost from Table 7 (row (i), column (d))	(b) Admin	(c) Operation	(d) Maintenance	(e) Replacement	(f) Other	(g) Total Costs (a)+…+(f)	(h) Discount Factor	(i) Discounted Costs (g) x (h)
2009	$0	$0	$0	$0	$0	$0	$0	1.00	$0
2010	$0	$0	$0	$0	$0	$0	$0	0.94	$0
2011	$3,632,370	$0	$0	$0	$0	$0	$3,632,370	0.89	$3,232,809
2012	$3,632,370	$0	$0	$0	$0	$0	$3,632,370	0.84	$3,051,190
2013	$0	$2,000	$19,500	$2,500	$0	$0	$24,000	0.79	$19,008
2014	$0	$7,000	$53,500	$17,500	$0	$0	$78,000	0.75	$58,266
2015	$0	$7,000	$53,500	$17,500	$0	$0	$78,000	0.71	$54,990
2016	$0	$7,000	$53,500	$17,500	$0	$0	$78,000	0.67	$51,870
2017	$0	$7,000	$53,500	$17,500	$0	$0	$78,000	0.63	$48,906
2018	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.59	$44,992
2019	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.56	$42,408
2020	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.53	$40,052
2021	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.50	$37,772
2022	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.47	$35,644
2023	$0	$7,000	$51,500	$27,500	$0	$0	$86,000	0.44	$38,012
2024	$0	$7,000	$51,500	$17,500	$10,000	$0	$86,000	0.42	$35,862
2025	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.39	$29,640
2026	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.37	$28,196
2027	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.35	$26,600
2028	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.33	$25,156
2029	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.31	$23,712
2030	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.29	$22,344
2031	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.28	$21,128
2032	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.26	$19,912
2033	$0	$7,000	$51,500	$27,500	$28,000	$0	$114,000	0.25	$28,158
2034	$0	$7,000	$51,500	$17,500	$310,000	$0	$386,000	0.23	$89,938
2035	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.22	$16,720
2036	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.21	$15,732
2037	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.20	$14,896
2038	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.19	$14,060
2039	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.17	$13,224
2040	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.16	$12,464
2041	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.16	$11,780
2042	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.15	$11,096
2043	$0	$7,000	$51,500	$27,500	$0	$0	$86,000	0.14	$11,868
2044	$0	$7,000	$51,500	$17,500	$10,000	$0	$86,000	0.13	$11,180
2045	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.12	$9,348
2046	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.12	$8,816
2047	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.11	$8,284
2048	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.10	$7,828
2049	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.10	$7,372
2050	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.09	$6,992
2051	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.09	$6,612
2052	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.08	$6,232
2053	$0	$7,000	$51,500	$27,500	$0	$0	$86,000	0.08	$6,622
2054	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.07	$5,548
2055	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.07	$5,244
2056	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.07	$4,940
2057	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.06	$4,636
2058	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.06	$4,408
2059	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.05	$4,126
2060	$0	$7,000	$51,500	$17,500	$0	$0	$76,000	0.05	$3,892
Project Life							**Total Present Value of Discounted Costs (Sum of Column (i))**		
							Transfer to Table 20, Column (c), Exhibit F: Proposal Costs and Benefit Summaries		**$7,340,486**

Comments: (1) Ongoing maintenance for the bathroom will be performed in-house by PW-BSFMD based on annual Building Maint Fund at a cost of $2,500 per year. (2) Habitat establishment is expected to end by 2017. Starting 2018, operations will be reduced to $17,500 for basin site oerations. (3) Canyon Operations intensify during the Winter & Spring. Costs expected to be higher with increase water flow. 4) Replacement cost of trail and other amenities. (5) Fish & Game and other renewable permit costs are included in the maintenance costs for the Canyon component. (6)

Table 7.A.2 - Annual Water Supply Benefits (2009 dollars)

Project: Hahamonga Basin Multi-Use Project

	(b) Type of Benefit: Avoided water imports due to increased groundwater supply/storage (Basin) (C) Measure of Benefit [Unit]: AF per year					(b) Type of Benefit: Avoided water imports due to increased water diversion (Canyon) (C) Measure of Benefit [Unit]: AF per year					(b) Type of Benefit: (C) Measure of Benefit [Unit]:					Discounting Calculations for Economic Benefits		
(a) Year	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(h) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009			0		$0			0		$0			0		$0	**$0**	**1.000**	**$0**
2010			0		$0			0		$0			0		$0	**$0**	**0.943**	**$0**
2011			0		$0			0		$0			0		$0	**$0**	**0.890**	**$0**
2012			0		$0			0		$0			0		$0	**$0**	**0.840**	**$0**
2013	-4,300	0	4,300	$560	$2,408,000			0		$0			0		$0	**$2,408,000**	**0.792**	**$1,907,136**
2014	-4,300	0	4,300	$583	$2,506,900	-875	0	875	$583	$510,125			0		$0	**$3,017,025**	**0.747**	**$2,253,718**
2015	-4,300	0	4,300	$604	$2,597,200	-875	0	875	$604	$528,500			0		$0	**$3,125,700**	**0.705**	**$2,203,619**
2016	-4,300	0	4,300	$626	$2,691,800	-875	0	875	$626	$547,750			0		$0	**$3,239,550**	**0.665**	**$2,154,301**
2017	-4,300	0	4,300	$649	$2,790,700	-875	0	875	$649	$567,875			0		$0	**$3,358,575**	**0.627**	**$2,105,827**
2018	-4,300	0	4,300	$672	$2,889,600	-875	0	875	$672	$588,000			0		$0	**$3,477,600**	**0.592**	**$2,058,739**
2019	-4,300	0	4,300	$697	$2,997,100	-875	0	875	$697	$609,875			0		$0	**$3,606,975**	**0.558**	**$2,012,692**
2020	-4,300	0	4,300	$722	$3,104,600	-875	0	875	$722	$631,750			0		$0	**$3,736,350**	**0.527**	**$1,969,056**
2021	-4,300	0	4,300	$729	$3,134,700	-875	0	875	$729	$637,875			0		$0	**$3,772,575**	**0.497**	**$1,874,970**
2022	-4,300	0	4,300	$736	$3,164,800	-875	0	875	$736	$644,000			0		$0	**$3,808,800**	**0.469**	**$1,786,327**
2023	-4,300	0	4,300	$743	$3,194,900	-875	0	875	$743	$650,125			0		$0	**$3,845,025**	**0.442**	**$1,699,501**
2024	-4,300	0	4,300	$751	$3,229,300	-875	0	875	$751	$657,125			0		$0	**$3,886,425**	**0.417**	**$1,620,639**
2025	-4,300	0	4,300	$758	$3,259,400	-875	0	875	$758	$663,250			0		$0	**$3,922,650**	**0.390**	**$1,529,834**
2026	-4,300	0	4,300	$765	$3,289,500	-875	0	875	$765	$669,375			0		$0	**$3,958,875**	**0.371**	**$1,468,743**
2027	-4,300	0	4,300	$773	$3,323,900	-875	0	875	$773	$676,375			0		$0	**$4,000,275**	**0.350**	**$1,400,096**
2028	-4,300	0	4,300	$780	$3,354,000	-875	0	875	$780	$682,500			0		$0	**$4,036,500**	**0.331**	**$1,336,082**
2029	-4,300	0	4,300	$788	$3,388,400	-875	0	875	$788	$689,500			0		$0	**$4,077,900**	**0.312**	**$1,272,305**
2030	-4,300	0	4,300	$796	$3,422,800	-875	0	875	$796	$696,500			0		$0	**$4,119,300**	**0.294**	**$1,211,074**
2031	-4,300	0	4,300	$804	$3,457,200	-875	0	875	$804	$703,500			0		$0	**$4,160,700**	**0.278**	**$1,156,675**
2032	-4,300	0	4,300	$811	$3,487,300	-875	0	875	$811	$709,625			0		$0	**$4,196,925**	**0.262**	**$1,099,594**
2033	-4,300	0	4,300	$820	$3,526,000	-875	0	875	$820	$717,500			0		$0	**$4,243,500**	**0.247**	**$1,048,145**
2034	-4,300	0	4,300	$828	$3,560,400	-875	0	875	$828	$724,500			0		$0	**$4,284,900**	**0.233**	**$998,382**
2035	-4,300	0	4,300	$836	$3,594,800	-875	0	875	$836	$731,500			0		$0	**$4,326,300**	**0.220**	**$951,786**
2036	-4,300	0	4,300	$844	$3,629,200	-875	0	875	$844	$738,500			0		$0	**$4,367,700**	**0.207**	**$904,114**
2037	-4,300	0	4,300	$852	$3,663,600	-875	0	875	$852	$745,500			0		$0	**$4,409,100**	**0.196**	**$864,184**
2038	-4,300	0	4,300	$860	$3,698,000	-875	0	875	$860	$752,500			0		$0	**$4,450,500**	**0.185**	**$823,343**
2039	-4,300	0	4,300	$869	$3,736,700	-875	0	875	$869	$760,375			0		$0	**$4,497,075**	**0.174**	**$782,491**
2040	-4,300	0	4,300	$878	$3,775,400	-875	0	875	$878	$768,250			0		$0	**$4,543,650**	**0.164**	**$745,159**
2041	-4,300	0	4,300	$886	$3,809,800	-875	0	875	$886	$775,250			0		$0	**$4,585,050**	**0.155**	**$710,683**
2042	-4,300	0	4,300	$894	$3,844,200	-875	0	875	$894	$782,250			0		$0	**$4,626,450**	**0.146**	**$675,462**
2043	-4,300	0	4,300	$903	$3,882,900	-875	0	875	$903	$790,125			0		$0	**$4,673,025**	**0.138**	**$644,877**
2044	-4,300	0	4,300	$912	$3,921,600	-875	0	875	$912	$798,000			0		$0	**$4,719,600**	**0.130**	**$613,548**
2045	-4,300	0	4,300	$921	$3,960,300	-875	0	875	$921	$805,875			0		$0	**$4,766,175**	**0.123**	**$586,240**
2046	-4,300	0	4,300	$930	$3,999,000	-875	0	875	$930	$813,750			0		$0	**$4,812,750**	**0.116**	**$558,279**
2047	-4,300	0	4,300	$939	$4,037,700	-875	0	875	$939	$821,625			0		$0	**$4,859,325**	**0.109**	**$529,666**
2048	-4,300	0	4,300	$949	$4,080,700	-875	0	875	$949	$830,375			0		$0	**$4,911,075**	**0.103**	**$505,841**
2049	-4,300	0	4,300	$958	$4,119,400	-875	0	875	$958	$838,250			0		$0	**$4,957,650**	**0.097**	**$480,892**
2050	-4,300	0	4,300	$967	$4,158,100	-875	0	875	$967	$846,125			0		$0	**$5,004,225**	**0.092**	**$460,389**
2051	-4,300	0	4,300	$977	$4,201,100	-875	0	875	$977	$854,875			0		$0	**$5,055,975**	**0.087**	**$439,870**
2052	-4,300	0	4,300	$986	$4,239,800	-875	0	875	$986	$862,750			0		$0	**$5,102,550**	**0.082**	**$418,409**
2053	-4,300	0	4,300	$996	$4,282,800	-875	0	875	$996	$871,500			0		$0	**$5,154,300**	**0.077**	**$396,881**
2054	-4,300	0	4,300	$1,006	$4,325,800	-875	0	875	$1,006	$880,250			0		$0	**$5,206,050**	**0.073**	**$380,042**
2055	-4,300	0	4,300	$1,016	$4,368,800	-875	0	875	$1,016	$889,000			0		$0	**$5,257,800**	**0.069**	**$362,788**
2056	-4,300	0	4,300	$1,025	$4,407,500	-875	0	875	$1,025	$896,875			0		$0	**$5,304,375**	**0.065**	**$344,784**
2057	-4,300	0	4,300	$1,036	$4,454,800	-875	0	875	$1,036	$906,500			0		$0	**$5,361,300**	**0.061**	**$327,039**
2058	-4,300	0	4,300	$1,046	$4,497,800	-875	0	875	$1,046	$915,250			0		$0	**$5,413,050**	**0.058**	**$313,957**
2059	-4,300	0	4,300	$1,056	$4,540,800	-875	0	875	$1,056	$924,000			0		$0	**$5,464,800**	**0.054**	**$296,675**
2060	-4,300	0	4,300	$1,066	$4,583,800	-875	0	875	$1,066	$932,750			0		$0	**$5,516,550**	**0.051**	**$282,533**

Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):	$50,567,382
Project Allocation:	100.0%
Total Present Value of Discounted Benefits (Monetized Benefits):	**$50,567,382**

	Narrative description of benefits: (1) Pooling of water in Basin is not currently possible due to innundation of So Cal Edison power poles, therefore no benefit without this project. (2) If the Raymond Basin Management Board allowed water agencies to pump, the value of this water would be $2.5 million dollars per year. The 4,300 acre feet per year benefit is based on an average rainfall year.	Narrative description of benefits: Imported water costs minus aquifer pumping costs of Canyon wate. The Canyon component will increase water diversion capcity and result in an increase in available groundwater supplies from 2,775 AFY to 3,650 AFY,thereby reduiciong water imports	Narrative description of benefits:		

Comments:

Table 7.A.3 - Annual Costs of Avoided Projects (2009 dollars)

Project: Hahamonga Basin Multi-Use Project

	Alternative (Avoided Project Name): Avoided Project Description:				Alternative (Avoided Project Name): Avoided Project Description:				Alternative (Avoided Project Name): Avoided Project Description:				Discounting Calculations for Economic Benefits		
(a) Year	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(e) Total Avoided Costs for All Alts ($)	(f) Discount Value	(g) Discounted Benefits [e x f]
2009				$0				$0				$0	**$0**	**1.000**	**$0**
2010				$0				$0				$0	**$0**	**0.943**	**$0**
2011				$0				$0				$0	**$0**	**0.890**	**$0**
2012				$0				$0				$0	**$0**	**0.840**	**$0**
2013				$0				$0				$0	**$0**	**0.792**	**$0**
2014				$0				$0				$0	**$0**	**0.747**	**$0**
2015				$0				$0				$0	**$0**	**0.705**	**$0**
2016				$0				$0				$0	**$0**	**0.665**	**$0**
2017				$0				$0				$0	**$0**	**0.627**	**$0**
2018				$0				$0				$0	**$0**	**0.592**	**$0**
2019				$0				$0				$0	**$0**	**0.558**	**$0**
2020				$0				$0				$0	**$0**	**0.527**	**$0**
2021				$0				$0				$0	**$0**	**0.497**	**$0**
2022				$0				$0				$0	**$0**	**0.469**	**$0**
2023				$0				$0				$0	**$0**	**0.442**	**$0**
2024				$0				$0				$0	**$0**	**0.417**	**$0**
2025				$0				$0				$0	**$0**	**0.390**	**$0**
2026				$0				$0				$0	**$0**	**0.371**	**$0**
2027				$0				$0				$0	**$0**	**0.350**	**$0**
2028				$0				$0				$0	**$0**	**0.331**	**$0**
2029				$0				$0				$0	**$0**	**0.312**	**$0**
2030				$0				$0				$0	**$0**	**0.294**	**$0**
2031				$0				$0				$0	**$0**	**0.278**	**$0**
2032				$0				$0				$0	**$0**	**0.262**	**$0**
2033				$0				$0				$0	**$0**	**0.247**	**$0**
2034				$0				$0				$0	**$0**	**0.233**	**$0**
2035				$0				$0				$0	**$0**	**0.220**	**$0**
2036				$0				$0				$0	**$0**	**0.207**	**$0**
2037				$0				$0				$0	**$0**	**0.196**	**$0**
2038				$0				$0				$0	**$0**	**0.185**	**$0**
2039				$0				$0				$0	**$0**	**0.174**	**$0**
2040				$0				$0				$0	**$0**	**0.164**	**$0**
2041				$0				$0				$0	**$0**	**0.155**	**$0**
2042				$0				$0				$0	**$0**	**0.146**	**$0**
2043				$0				$0				$0	**$0**	**0.138**	**$0**
2044				$0				$0				$0	**$0**	**0.130**	**$0**
2045				$0				$0				$0	**$0**	**0.123**	**$0**
2046				$0				$0				$0	**$0**	**0.116**	**$0**
2047				$0				$0				$0	**$0**	**0.109**	**$0**
2048				$0				$0				$0	**$0**	**0.103**	**$0**
2049				$0				$0				$0	**$0**	**0.097**	**$0**
2050				$0				$0				$0	**$0**	**0.092**	**$0**
2051				$0				$0				$0	**$0**	**0.087**	**$0**
2052				$0				$0				$0	**$0**	**0.082**	**$0**
2053				$0				$0				$0	**$0**	**0.077**	**$0**
2054				$0				$0				$0	**$0**	**0.073**	**$0**
2055				$0				$0				$0	**$0**	**0.069**	**$0**
2056				$0				$0				$0	**$0**	**0.065**	**$0**
2057				$0				$0				$0	**$0**	**0.061**	**$0**
2058				$0				$0				$0	**$0**	**0.058**	**$0**
2059				$0				$0				$0	**$0**	**0.054**	**$0**
2060				$0				$0				$0	**$0**	**0.051**	**$0**

Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):	$0
Project Allocation:	100.0%
Total Present Value of Discounted Benefits (Monetized Benefits):	**$0**

Comments: There are potential avoided water supply projects, but these benefits are already captured in Table 12.

Table 7.A.4 - Annual Other Water Supply Benefits (2009 dollars)						
Project: Hahamonga Basin Multi-Use Project						
	(b) Type of Benefit:	*(b) Type of Benefit:*	*(b) Type of Benefit:*	*Discounting Calculations for Economic Benefits*		
	(C) Description of Benefit:	*(C) Description of Benefit:*	*(C) Description of Benefit:*			
(a) Year	(d) Annual Benefit ($)	(d) Annual Benefit ($)	(d) Annual Benefit ($)	(d) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009				$0	1.000	$0
2010				$0	0.943	$0
2011				$0	0.890	$0
2012				$0	0.840	$0
2013				$0	0.792	$0
2014				$0	0.747	$0
2015				$0	0.705	$0
2016				$0	0.665	$0
2017				$0	0.627	$0
2018				$0	0.592	$0
2019				$0	0.558	$0
2020				$0	0.527	$0
2021				$0	0.497	$0
2022				$0	0.469	$0
2023				$0	0.442	$0
2024				$0	0.417	$0
2025				$0	0.390	$0
2026				$0	0.371	$0
2027				$0	0.350	$0
2028				$0	0.331	$0
2029				$0	0.312	$0
2030				$0	0.294	$0
2031				$0	0.278	$0
2032				$0	0.262	$0
2033				$0	0.247	$0
2034				$0	0.233	$0
2035				$0	0.220	$0
2036				$0	0.207	$0
2037				$0	0.196	$0
2038				$0	0.185	$0
2039				$0	0.174	$0
2040				$0	0.164	$0
2041				$0	0.155	$0
2042				$0	0.146	$0
2043				$0	0.138	$0
2044				$0	0.130	$0
2045				$0	0.123	$0
2046				$0	0.116	$0
2047				$0	0.109	$0
2048				$0	0.103	$0
2049				$0	0.097	$0
2050				$0	0.092	$0
2051				$0	0.087	$0
2052				$0	0.082	$0
2053				$0	0.077	$0
2054				$0	0.073	$0
2055				$0	0.069	$0
2056				$0	0.065	$0
2057				$0	0.061	$0
2058				$0	0.058	$0
2059				$0	0.054	$0
2060				$0	0.051	$0
					Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):	$0
					Project Allocation:	100.0%
					Total Present Value of Discounted Benefits (Monetized Benefits):	**$0**

Comments:

Table 7.A.5 - Total Water Supply Benefits (2009 dollars)			
Project: Hahamonga Basin Multi-Use Project			
(a) Total Discounted Water Supply Benefits	**(b) Total Discounted Avoided Project Costs**	**(c) Other Discounted Water Supply Benefits**	**(d) Total Value of Discounted Benefits [a + c] or [b + c]**
$50,567,382	$0	$0	**$50,567,382**

Comments:

APPENDIX B

Citywide Smart Irrigation Control System and Recycled Water Improvements

Table 7.B.1 - Annual Cost of Project
(All costs should be in 2009 dollars)
Project: Citywide Smart Irrigation Control System and Recycled Water Improvements Project

	Initial Costs	Operations and Maintenance Costs						Discounting Calculations		Original Values (in constant 2009 dollars)					
Year	(a) Grand Total Cost from Table 7 (row (i), column (d))	(b) Admin	(c) Operation	(d) Maintenance	(e) Replacement	(f) Other	(g) Total Costs (a)+…+(f)	(h) Discount Factor	(i) Discounted Costs (g) x (h)	(b) Admin	(c) Operation	(d) Maintenance	(e) Replacement	(f) Other	
2009	$ -	$ -	$ -	$ -	$ -	$ -	$ -	1.00	$0	$ -	$ -	$ -	$ -	$ -	$ -
2010	$ -	$ -	$ -	$ -	$ -	$ -	$ -	0.94	$0	$ -	$ -	$ -	$ -	$ -	$ -
2011	$ 525,618	$ -	$ 9,400	$ -	$ -	$ -	$ 535,018	0.89	$476,166	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2012	$ 287,702	$ -	$ 9,400	$ -	$ -	$ -	$ 297,102	0.84	$249,566	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2013	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.79	$7,445	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2014	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.75	$7,022	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2015	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.71	$6,627	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2016	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.67	$6,251	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2017	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.63	$5,894	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2018	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.59	$5,565	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2019	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.56	$5,245	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2020	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.53	$4,954	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2021	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.50	$4,672	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2022	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.47	$4,409	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2023	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.44	$4,155	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2024	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.42	$3,920	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2025	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.39	$3,666	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2026	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.37	$3,487	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2027	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.35	$3,290	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2028	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.33	$3,111	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2029	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.31	$2,933	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2030	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.29	$2,764	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2031	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.28	$2,613	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2032	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.26	$2,463	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2033	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.25	$2,322	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2034	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.23	$2,190	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2035	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.22	$2,068	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2036	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.21	$1,946	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2037	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.20	$1,842	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2038	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.19	$1,739	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2039	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.17	$1,636	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2040	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.16	$1,542	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2041	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.16	$1,457	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2042	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.15	$1,372	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2043	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.14	$1,297	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2044	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.13	$1,222	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2045	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.12	$1,156	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2046	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.12	$1,090	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2047	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.11	$1,025	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2048	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.10	$968	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2049	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.10	$912	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2050	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.09	$865	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2051	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.09	$818	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2052	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.08	$771	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2053	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.08	$724	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2054	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.07	$686	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2055	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.07	$649	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2056	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.07	$611	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2057	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.06	$573	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2058	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.06	$545	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2059	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.05	$510	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
2060	$ -	$ -	$ 9,400	$ -	$ -	$ -	$ 9,400	0.05	$481	$ -	$ 9,400.00	$ -	$ -	$ -	$ -
Project Life								**Total Present Value of Discounted Costs (Sum of Column (i))**							
								Transfer to Table 20, Column (c), Exhibit F: Proposal Costs and Benefit Summaries	**$849,234**						

Comments: The only foreseeable maintenance cost with this project is access to the current ET weather data. This is done through a subscription service by the manufacture at an estimated cost of $9,400 per year. This service plan is sold at a discounted rate for $47,000 for 5 years

Table 7.B.2 - Annual Water Supply Benefits (2009 dollars)

Project: Citywide Smart Irrigation Control System and Recycled Water Improvements Project

	(b) Type of Benefit: Avoided cost of purchasing imported water *(C) Measure of Benefit [Unit]: Acre feet/yr*					*(b) Type of Benefit:* *(C) Measure of Benefit [Unit]:*					*(b) Type of Benefit:* *(C) Measure of Benefit [Unit]:*					*Discounting Calculations for Economic Benefits*		
(a) Year	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(h) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009			0		$0			0		$0			0		$0	**$0**	**1.000**	**$0**
2010			0		$0			0		$0			0		$0	**$0**	**0.943**	**$0**
2011	-57	0	57	$513.00	$29,241			0		$0			0		$0	**$29,241**	**0.890**	**$26,024**
2012	-57	0	57	$537.00	$30,609			0		$0			0		$0	**$30,609**	**0.840**	**$25,712**
2013	-57	0	57	$560.00	$31,920			0		$0			0		$0	**$31,920**	**0.792**	**$25,281**
2014	-57	0	57	$583.00	$33,231			0		$0			0		$0	**$33,231**	**0.747**	**$24,824**
2015	-57	0	57	$604.00	$34,428			0		$0			0		$0	**$34,428**	**0.705**	**$24,272**
2016	-57	0	57	$626.00	$35,682			0		$0			0		$0	**$35,682**	**0.665**	**$23,729**
2017	-57	0	57	$649.00	$36,993			0		$0			0		$0	**$36,993**	**0.627**	**$23,195**
2018	-57	0	57	$672.00	$38,304			0		$0			0		$0	**$38,304**	**0.592**	**$22,676**
2019	-57	0	57	$697.00	$39,729			0		$0			0		$0	**$39,729**	**0.558**	**$22,169**
2020	-57	0	57	$722.00	$41,154			0		$0			0		$0	**$41,154**	**0.527**	**$21,688**
2021	-57	0	57	$729.00	$41,553			0		$0			0		$0	**$41,553**	**0.497**	**$20,652**
2022	-57	0	57	$736.00	$41,952			0		$0			0		$0	**$41,952**	**0.469**	**$19,675**
2023	-57	0	57	$743.00	$42,351			0		$0			0		$0	**$42,351**	**0.442**	**$18,719**
2024	-57	0	57	$751.00	$42,807			0		$0			0		$0	**$42,807**	**0.417**	**$17,851**
2025	-57	0	57	$758.00	$43,206			0		$0			0		$0	**$43,206**	**0.390**	**$16,850**
2026	-57	0	57	$765.00	$43,605			0		$0			0		$0	**$43,605**	**0.371**	**$16,177**
2027	-57	0	57	$773.00	$44,061			0		$0			0		$0	**$44,061**	**0.350**	**$15,421**
2028	-57	0	57	$780.00	$44,460			0		$0			0		$0	**$44,460**	**0.331**	**$14,716**
2029	-57	0	57	$788.00	$44,916			0		$0			0		$0	**$44,916**	**0.312**	**$14,014**
2030	-57	0	57	$796.00	$45,372			0		$0			0		$0	**$45,372**	**0.294**	**$13,339**
2031	-57	0	57	$804.00	$45,828			0		$0			0		$0	**$45,828**	**0.278**	**$12,740**
2032	-57	0	57	$811.00	$46,227			0		$0			0		$0	**$46,227**	**0.262**	**$12,111**
2033	-57	0	57	$820.00	$46,740			0		$0			0		$0	**$46,740**	**0.247**	**$11,545**
2034	-57	0	57	$828.00	$47,196			0		$0			0		$0	**$47,196**	**0.233**	**$10,997**
2035	-57	0	57	$836.00	$47,652			0		$0			0		$0	**$47,652**	**0.220**	**$10,483**
2036	-57	0	57	$844.00	$48,108			0		$0			0		$0	**$48,108**	**0.207**	**$9,958**
2037	-57	0	57	$852.00	$48,564			0		$0			0		$0	**$48,564**	**0.196**	**$9,519**
2038	-57	0	57	$860.00	$49,020			0		$0			0		$0	**$49,020**	**0.185**	**$9,069**
2039	-57	0	57	$869.00	$49,533			0		$0			0		$0	**$49,533**	**0.174**	**$8,619**
2040	-57	0	57	$878.00	$50,046			0		$0			0		$0	**$50,046**	**0.164**	**$8,208**
2041	-57	0	57	$886.00	$50,502			0		$0			0		$0	**$50,502**	**0.155**	**$7,828**
2042	-57	0	57	$894.00	$50,958			0		$0			0		$0	**$50,958**	**0.146**	**$7,440**
2043	-57	0	57	$903.00	$51,471			0		$0			0		$0	**$51,471**	**0.138**	**$7,103**
2044	-57	0	57	$912.00	$51,984			0		$0			0		$0	**$51,984**	**0.130**	**$6,758**
2045	-57	0	57	$921.00	$52,497			0		$0			0		$0	**$52,497**	**0.123**	**$6,457**
2046	-57	0	57	$930.00	$53,010			0		$0			0		$0	**$53,010**	**0.116**	**$6,149**
2047	-57	0	57	$939.00	$53,523			0		$0			0		$0	**$53,523**	**0.109**	**$5,834**
2048	-57	0	57	$949.00	$54,093			0		$0			0		$0	**$54,093**	**0.103**	**$5,572**
2049	-57	0	57	$958.00	$54,606			0		$0			0		$0	**$54,606**	**0.097**	**$5,297**
2050	-57	0	57	$967.00	$55,119			0		$0			0		$0	**$55,119**	**0.092**	**$5,071**
2051	-57	0	57	$977.00	$55,689			0		$0			0		$0	**$55,689**	**0.087**	**$4,845**
2052	-57	0	57	$986.00	$56,202			0		$0			0		$0	**$56,202**	**0.082**	**$4,609**
2053	-57	0	57	$996.00	$56,772			0		$0			0		$0	**$56,772**	**0.077**	**$4,371**
2054	-57	0	57	$1,006.00	$57,342			0		$0			0		$0	**$57,342**	**0.073**	**$4,186**
2055	-57	0	57	$1,016.00	$57,912			0		$0			0		$0	**$57,912**	**0.069**	**$3,996**
2056	-57	0	57	$1,025.00	$58,425			0		$0			0		$0	**$58,425**	**0.065**	**$3,798**
2057	-57	0	57	$1,036.00	$59,052			0		$0			0		$0	**$59,052**	**0.061**	**$3,602**
2058	-57	0	57	$1,046.00	$59,622			0		$0			0		$0	**$59,622**	**0.058**	**$3,458**
2059	-57	0	57	$1,056.00	$60,192			0		$0			0		$0	**$60,192**	**0.054**	**$3,268**
2060	-57	0	57	$1,066.00	$60,762			0		$0			0		$0	**$60,762**	**0.051**	**$3,112**
																	Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):	$612,985
																	Project Allocation:	100.0%
																	Total Present Value of Discounted Benefits (Monetized Benefits):	**$612,985**

Table 7.B.3 - Annual Costs of Avoided Projects (2009 dollars)

Project: Citywide Smart Irrigation Control System and Recycled Water Improvements Project

	Alternative (Avoided Project Name): *Avoided Project Description:*				*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Discounting Calculations for Economic Benefits*		
(a) Year	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(e) Total Avoided Costs for All Alts ($)	(f) Discount Value	(g) Discounted Benefits [e x f]
2009				$0				$0				$0	**$0**	**1.000**	**$0**
2010				$0				$0				$0	**$0**	**0.943**	**$0**
2011				$0				$0				$0	**$0**	**0.890**	**$0**
2012				$0				$0				$0	**$0**	**0.840**	**$0**
2013				$0				$0				$0	**$0**	**0.792**	**$0**
2014				$0				$0				$0	**$0**	**0.747**	**$0**
2015				$0				$0				$0	**$0**	**0.705**	**$0**
2016				$0				$0				$0	**$0**	**0.665**	**$0**
2017				$0				$0				$0	**$0**	**0.627**	**$0**
2018				$0				$0				$0	**$0**	**0.592**	**$0**
2019				$0				$0				$0	**$0**	**0.558**	**$0**
2020				$0				$0				$0	**$0**	**0.527**	**$0**
2021				$0				$0				$0	**$0**	**0.497**	**$0**
2022				$0				$0				$0	**$0**	**0.469**	**$0**
2023				$0				$0				$0	**$0**	**0.442**	**$0**
2024				$0				$0				$0	**$0**	**0.417**	**$0**
2025				$0				$0				$0	**$0**	**0.390**	**$0**
2026				$0				$0				$0	**$0**	**0.371**	**$0**
2027				$0				$0				$0	**$0**	**0.350**	**$0**
2028				$0				$0				$0	**$0**	**0.331**	**$0**
2029				$0				$0				$0	**$0**	**0.312**	**$0**
2030				$0				$0				$0	**$0**	**0.294**	**$0**
2031				$0				$0				$0	**$0**	**0.278**	**$0**
2032				$0				$0				$0	**$0**	**0.262**	**$0**
2033				$0				$0				$0	**$0**	**0.247**	**$0**
2034				$0				$0				$0	**$0**	**0.233**	**$0**
2035				$0				$0				$0	**$0**	**0.220**	**$0**
2036				$0				$0				$0	**$0**	**0.207**	**$0**
2037				$0				$0				$0	**$0**	**0.196**	**$0**
2038				$0				$0				$0	**$0**	**0.185**	**$0**
2039				$0				$0				$0	**$0**	**0.174**	**$0**
2040				$0				$0				$0	**$0**	**0.164**	**$0**
2041				$0				$0				$0	**$0**	**0.155**	**$0**
2042				$0				$0				$0	**$0**	**0.146**	**$0**
2043				$0				$0				$0	**$0**	**0.138**	**$0**
2044				$0				$0				$0	**$0**	**0.130**	**$0**
2045				$0				$0				$0	**$0**	**0.123**	**$0**
2046				$0				$0				$0	**$0**	**0.116**	**$0**
2047				$0				$0				$0	**$0**	**0.109**	**$0**
2048				$0				$0				$0	**$0**	**0.103**	**$0**
2049				$0				$0				$0	**$0**	**0.097**	**$0**
2050				$0				$0				$0	**$0**	**0.092**	**$0**
2051				$0				$0				$0	**$0**	**0.087**	**$0**
2052				$0				$0				$0	**$0**	**0.082**	**$0**
2053				$0				$0				$0	**$0**	**0.077**	**$0**
2054				$0				$0				$0	**$0**	**0.073**	**$0**
2055				$0				$0				$0	**$0**	**0.069**	**$0**
2056				$0				$0				$0	**$0**	**0.065**	**$0**
2057				$0				$0				$0	**$0**	**0.061**	**$0**
2058				$0				$0				$0	**$0**	**0.058**	**$0**
2059				$0				$0				$0	**$0**	**0.054**	**$0**
2060				$0				$0				$0	**$0**	**0.051**	**$0**
													Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
													Project Allocation:		100.0%
													Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Table 7.B.4 - Annual Other Water Supply Benefits (2009 dollars)						
Project: Citywide Smart Irrigation Control System and Recycled Water Improvements Project						
	(b) Type of Benefit:	(b) Type of Benefit:	(b) Type of Benefit:	Discounting Calculations for Economic Benefits		
	(C) Description of Benefit:	(C) Description of Benefit:	(C) Description of Benefit:			
(a) Year	(d) Annual Benefit ($)	(d) Annual Benefit ($)	(d) Annual Benefit ($)	(d) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009	$0	$0	$0	**$0**	**1.000**	**$0**
2010	$0	$0	$0	**$0**	**0.943**	**$0**
2011	$0	$0	$0	**$0**	**0.890**	**$0**
2012	$0	$0	$0	**$0**	**0.840**	**$0**
2013	$0	$0	$0	**$0**	**0.792**	**$0**
2014	$0	$0	$0	**$0**	**0.747**	**$0**
2015	$0	$0	$0	**$0**	**0.705**	**$0**
2016	$0	$0	$0	**$0**	**0.665**	**$0**
2017	$0	$0	$0	**$0**	**0.627**	**$0**
2018	$0	$0	$0	**$0**	**0.592**	**$0**
2019	$0	$0	$0	**$0**	**0.558**	**$0**
2020	$0	$0	$0	**$0**	**0.527**	**$0**
2021	$0	$0	$0	**$0**	**0.497**	**$0**
2022	$0	$0	$0	**$0**	**0.469**	**$0**
2023	$0	$0	$0	**$0**	**0.442**	**$0**
2024	$0	$0	$0	**$0**	**0.417**	**$0**
2025	$0	$0	$0	**$0**	**0.390**	**$0**
2026	$0	$0	$0	**$0**	**0.371**	**$0**
2027	$0	$0	$0	**$0**	**0.350**	**$0**
2028	$0	$0	$0	**$0**	**0.331**	**$0**
2029	$0	$0	$0	**$0**	**0.312**	**$0**
2030	$0	$0	$0	**$0**	**0.294**	**$0**
2031	$0	$0	$0	**$0**	**0.278**	**$0**
2032	$0	$0	$0	**$0**	**0.262**	**$0**
2033	$0	$0	$0	**$0**	**0.247**	**$0**
2034	$0	$0	$0	**$0**	**0.233**	**$0**
2035	$0	$0	$0	**$0**	**0.220**	**$0**
2036	$0	$0	$0	**$0**	**0.207**	**$0**
2037	$0	$0	$0	**$0**	**0.196**	**$0**
2038	$0	$0	$0	**$0**	**0.185**	**$0**
2039	$0	$0	$0	**$0**	**0.174**	**$0**
2040	$0	$0	$0	**$0**	**0.164**	**$0**
2041	$0	$0	$0	**$0**	**0.155**	**$0**
2042	$0	$0	$0	**$0**	**0.146**	**$0**
2043	$0	$0	$0	**$0**	**0.138**	**$0**
2044	$0	$0	$0	**$0**	**0.130**	**$0**
2045	$0	$0	$0	**$0**	**0.123**	**$0**
2046	$0	$0	$0	**$0**	**0.116**	**$0**
2047	$0	$0	$0	**$0**	**0.109**	**$0**
2048	$0	$0	$0	**$0**	**0.103**	**$0**
2049	$0	$0	$0	**$0**	**0.097**	**$0**
2050	$0	$0	$0	**$0**	**0.092**	**$0**
2051	$0	$0	$0	**$0**	**0.087**	**$0**
2052	$0	$0	$0	**$0**	**0.082**	**$0**
2053	$0	$0	$0	**$0**	**0.077**	**$0**
2054	$0	$0	$0	**$0**	**0.073**	**$0**
2055	$0	$0	$0	**$0**	**0.069**	**$0**
2056	$0	$0	$0	**$0**	**0.065**	**$0**
2057	$0	$0	$0	**$0**	**0.061**	**$0**
2058	$0	$0	$0	**$0**	**0.058**	**$0**
2059	$0	$0	$0	**$0**	**0.054**	**$0**
2060	$0	$0	$0	**$0**	**0.051**	**$0**
				Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
				Project Allocation:		100.0%
				Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Table 7.B.5 - Total Water Supply Benefits (2009 dollars)			
Project: Citywide Smart Irrigation Control System and Recycled Water Improvements Project			
(a) Total Discounted Water Supply Benefits	**(b) Total Discounted Avoided Project Costs**	**(c) Other Discounted Water Supply Benefits**	**(d) Total Value of Discounted Benefits [a + c] or [b + c]**
$612,985	$0	$0	**$612,985**
Comments:			

APPENDIX C

Storm Drain Improvements and Installation of Infiltration Chambers – City of Hawthorne

Table 7.C.1 - Annual Cost of Project
(All costs should be in 2009 dollars)
Project: Storm Drain Improvements & Install of Infiltration Chambers on Hawthorn Blvd

	Initial Costs	Operations and Maintenance Costs						Discounting Calculations	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
Year	Grand Total Cost from Table 7 (row (i), column (d))	Admin	Operation	Maintenance	Replacement	Other	Total Costs (a)+…+(f)	Discount Factor	Discounted Costs (g) x (h)
2009	$91,004						$91,004	1.00	$91,004
2010	$91,004						$91,004	0.94	$85,817
2011	$106,629	$125,000	$0	$0	$0	$0	$231,629	0.89	$206,150
2012	$127,463	$0	$4,000,000	$0	$0	$0	$4,127,463	0.84	$3,467,069
2013	$2,840,142	$0	$1,000,000	$880,381	$0	$0	$4,720,523	0.79	$3,738,654
2014	$2,905,116	$5,000	$10,000	$50,000	$0	$0	$2,970,116	0.75	$2,218,677
2015	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.71	$45,825
2016	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.67	$43,225
2017	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.63	$40,755
2018	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.59	$38,480
2019	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.56	$36,270
2020	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.53	$34,255
2021	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.50	$32,305
2022	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.47	$30,485
2023	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.44	$28,730
2024	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.42	$27,105
2025	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.39	$25,350
2026	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.37	$24,115
2027	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.35	$22,750
2028	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.33	$21,515
2029	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.31	$20,280
2030	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.29	$19,110
2031	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.28	$18,070
2032	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.26	$17,030
2033	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.25	$16,055
2034	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.23	$15,145
2035	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.22	$14,300
2036	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.21	$13,455
2037	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.20	$12,740
2038	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.19	$12,025
2039	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.17	$11,310
2040	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.16	$10,660
2041	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.16	$10,075
2042	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.15	$9,490
2043	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.14	$8,970
2044	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.13	$8,450
2045	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.12	$7,995
2046	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.12	$7,540
2047	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.11	$7,085
2048	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.10	$6,695
2049	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.10	$6,305
2050	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.09	$5,980
2051	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.09	$5,655
2052	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.08	$5,330
2053	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.08	$5,005
2054	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.07	$4,745
2055	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.07	$4,485
2056	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.07	$4,225
2057	$0	$5,000	$10,000	$50,000	$0	$0	$65,000	0.06	$3,965
2058	$0	$20,000	$200,000	$100,000	$0	$0	$320,000	0.06	$18,560
2059	$0	$20,000	$200,000	$100,000	$0	$0	$320,000	0.05	$17,372
2060	$0	$20,000	$200,000	$100,000	$0	$0	$320,000	0.05	$16,389
Project Life							Total Present Value of Discounted Costs (Sum of Column (i))		
							Transfer to Table 20, Column (c), Exhibit F: Proposal Costs and Benefit Summaries		**$10,603,033**

Comments:
The $125,000 in 2011 is large as it is the initial effort which will require more personal & administrative oversight. This will cover the years 2011 through 2013.
Operational costs will not begin until 2012, with a larger amount planned in the beginning for the initial start-up.
Maintenance on the project is not expected to be needed until 2013, with a larger amount planned in the beginning for the initial start-up.

Table 7.C.2 - Annual Water Supply Benefits (2009 dollars)

Project: Storm Drain Improvements & Install of Infiltration Chambers on Hawthorn Blvd

	(b) Type of Benefit: Increased groundwater supply *(C) Measure of Benefit [Unit]: Gallons/year [not monetized]*					*(b) Type of Benefit:* *(C) Measure of Benefit [Unit]:*					*(b) Type of Benefit:* *(C) Measure of Benefit [Unit]:*					*Discounting Calculations for Economic Benefits*		
(a) Year	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(h) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009	0	0	0		$0			0		$0			0		$0	**$0**	**1.000**	**$0**
2010	0	0	0		$0			0		$0			0		$0	**$0**	**0.943**	**$0**
2011	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.890**	**$0**
2012	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.840**	**$0**
2013	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.792**	**$0**
2014	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.747**	**$0**
2015	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.705**	**$0**
2016	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.665**	**$0**
2017	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.627**	**$0**
2018	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.592**	**$0**
2019	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.558**	**$0**
2020	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.527**	**$0**
2021	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.497**	**$0**
2022	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.469**	**$0**
2023	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.442**	**$0**
2024	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.417**	**$0**
2025	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.390**	**$0**
2026	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.371**	**$0**
2027	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.350**	**$0**
2028	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.331**	**$0**
2029	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.312**	**$0**
2030	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.294**	**$0**
2031	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.278**	**$0**
2032	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.262**	**$0**
2033	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.247**	**$0**
2034	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.233**	**$0**
2035	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.220**	**$0**
2036	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.207**	**$0**
2037	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.196**	**$0**
2038	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.185**	**$0**
2039	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.174**	**$0**
2040	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.164**	**$0**
2041	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.155**	**$0**
2042	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.146**	**$0**
2043	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.138**	**$0**
2044	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.130**	**$0**
2045	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.123**	**$0**
2046	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.116**	**$0**
2047	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.109**	**$0**
2048	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.103**	**$0**
2049	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.097**	**$0**
2050	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.092**	**$0**
2051	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.087**	**$0**
2052	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.082**	**$0**
2053	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.077**	**$0**
2054	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.073**	**$0**
2055	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.069**	**$0**
2056	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.065**	**$0**
2057	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.061**	**$0**
2058	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.058**	**$0**
2059	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.054**	**$0**
2060	0	9,000,000	9,000,000		$0			0		$0			0		$0	**$0**	**0.051**	**$0**
																	Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):	$0
																	Project Allocation:	100.0%
																	Total Present Value of Discounted Benefits (Monetized Benefits):	**$0**

	Narrative description of benefits: *Infiltration chamber under street parking area will be installed with gravel well to permeable layer such as sand layer*	**Narrative description of benefits:**	**Narrative description of benefits:**		

Table 7.C.3 - Annual Costs of Avoided Projects (2009 dollars)

Project: Storm Drain Improvements & Install of Infiltration Chambers on Hawthorn Blvd

	Alternative (Avoided Project Name): *Avoided Project Description:*				*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Discounting Calculations for Economic Benefits*		
(a) Year	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(e) Total Avoided Costs for All Alts ($)	(f) Discount Value	(g) Discounted Benefits [e x f]
2009				$0				$0				$0	**$0**	**1.000**	**$0**
2010				$0				$0				$0	**$0**	**0.943**	**$0**
2011				$0				$0				$0	**$0**	**0.890**	**$0**
2012				$0				$0				$0	**$0**	**0.840**	**$0**
2013				$0				$0				$0	**$0**	**0.792**	**$0**
2014				$0				$0				$0	**$0**	**0.747**	**$0**
2015				$0				$0				$0	**$0**	**0.705**	**$0**
2016				$0				$0				$0	**$0**	**0.665**	**$0**
2017				$0				$0				$0	**$0**	**0.627**	**$0**
2018				$0				$0				$0	**$0**	**0.592**	**$0**
2019				$0				$0				$0	**$0**	**0.558**	**$0**
2020				$0				$0				$0	**$0**	**0.527**	**$0**
2021				$0				$0				$0	**$0**	**0.497**	**$0**
2022				$0				$0				$0	**$0**	**0.469**	**$0**
2023				$0				$0				$0	**$0**	**0.442**	**$0**
2024				$0				$0				$0	**$0**	**0.417**	**$0**
2025				$0				$0				$0	**$0**	**0.390**	**$0**
2026				$0				$0				$0	**$0**	**0.371**	**$0**
2027				$0				$0				$0	**$0**	**0.350**	**$0**
2028				$0				$0				$0	**$0**	**0.331**	**$0**
2029				$0				$0				$0	**$0**	**0.312**	**$0**
2030				$0				$0				$0	**$0**	**0.294**	**$0**
2031				$0				$0				$0	**$0**	**0.278**	**$0**
2032				$0				$0				$0	**$0**	**0.262**	**$0**
2033				$0				$0				$0	**$0**	**0.247**	**$0**
2034				$0				$0				$0	**$0**	**0.233**	**$0**
2035				$0				$0				$0	**$0**	**0.220**	**$0**
2036				$0				$0				$0	**$0**	**0.207**	**$0**
2037				$0				$0				$0	**$0**	**0.196**	**$0**
2038				$0				$0				$0	**$0**	**0.185**	**$0**
2039				$0				$0				$0	**$0**	**0.174**	**$0**
2040				$0				$0				$0	**$0**	**0.164**	**$0**
2041				$0				$0				$0	**$0**	**0.155**	**$0**
2042				$0				$0				$0	**$0**	**0.146**	**$0**
2043				$0				$0				$0	**$0**	**0.138**	**$0**
2044				$0				$0				$0	**$0**	**0.130**	**$0**
2045				$0				$0				$0	**$0**	**0.123**	**$0**
2046				$0				$0				$0	**$0**	**0.116**	**$0**
2047				$0				$0				$0	**$0**	**0.109**	**$0**
2048				$0				$0				$0	**$0**	**0.103**	**$0**
2049				$0				$0				$0	**$0**	**0.097**	**$0**
2050				$0				$0				$0	**$0**	**0.092**	**$0**
2051				$0				$0				$0	**$0**	**0.087**	**$0**
2052				$0				$0				$0	**$0**	**0.082**	**$0**
2053				$0				$0				$0	**$0**	**0.077**	**$0**
2054				$0				$0				$0	**$0**	**0.073**	**$0**
2055				$0				$0				$0	**$0**	**0.069**	**$0**
2056				$0				$0				$0	**$0**	**0.065**	**$0**
2057				$0				$0				$0	**$0**	**0.061**	**$0**
2058				$0				$0				$0	**$0**	**0.058**	**$0**
2059				$0				$0				$0	**$0**	**0.054**	**$0**
2060				$0				$0				$0	**$0**	**0.051**	**$0**
													Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
													Project Allocation:		100.0%
													Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Table 7.C.4 - Annual Other Water Supply Benefits (2009 dollars)

Project: Storm Drain Improvements & Install of Infiltration Chambers on Hawthorn Blvd

(a) Year	*(b) Type of Benefit: (C) Description of Benefit:* (d) Annual Benefit ($)	*(b) Type of Benefit: (C) Description of Benefit:* (d) Annual Benefit ($)	*(b) Type of Benefit: (C) Description of Benefit:* (d) Annual Benefit ($)	*Discounting Calculations for Economic Benefits* (d) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009				$0	1.000	$0
2010				$0	0.943	$0
2011				$0	0.890	$0
2012				$0	0.840	$0
2013				$0	0.792	$0
2014				$0	0.747	$0
2015				$0	0.705	$0
2016				$0	0.665	$0
2017				$0	0.627	$0
2018				$0	0.592	$0
2019				$0	0.558	$0
2020				$0	0.527	$0
2021				$0	0.497	$0
2022				$0	0.469	$0
2023				$0	0.442	$0
2024				$0	0.417	$0
2025				$0	0.390	$0
2026				$0	0.371	$0
2027				$0	0.350	$0
2028				$0	0.331	$0
2029				$0	0.312	$0
2030				$0	0.294	$0
2031				$0	0.278	$0
2032				$0	0.262	$0
2033				$0	0.247	$0
2034				$0	0.233	$0
2035				$0	0.220	$0
2036				$0	0.207	$0
2037				$0	0.196	$0
2038				$0	0.185	$0
2039				$0	0.174	$0
2040				$0	0.164	$0
2041				$0	0.155	$0
2042				$0	0.146	$0
2043				$0	0.138	$0
2044				$0	0.130	$0
2045				$0	0.123	$0
2046				$0	0.116	$0
2047				$0	0.109	$0
2048				$0	0.103	$0
2049				$0	0.097	$0
2050				$0	0.092	$0
2051				$0	0.087	$0
2052				$0	0.082	$0
2053				$0	0.077	$0
2054				$0	0.073	$0
2055				$0	0.069	$0
2056				$0	0.065	$0
2057				$0	0.061	$0
2058				$0	0.058	$0
2059				$0	0.054	$0
2060				$0	0.051	$0
				Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
				Project Allocation:		100.0%
				Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Table 7.C.5 - Total Water Supply Benefits (2009 dollars)			
Project: Storm Drain Improvements & Install of Infiltration Chambers on Hawthorn Blvd			
(a) Total Discounted Water Supply Benefits	**(b) Total Discounted Avoided Project Costs**	**(c) Other Discounted Water Supply Benefits**	**(d) Total Value of Discounted Benefits [a + c] or [b + c]**
$0	$0	$0	**$0**
Comments:			

APPENDIX D

Penmar Water Quality and Runoff Reuse –

City of Los Angeles, Bureau of Sanitation

Table 7.D.1 - Annual Cost of Project

(All costs should be in 2009 dollars)

Project: Penmar Water Quality Improvement and Runoff Reuse Project

	Initial Costs	Operations and Maintenance Costs						Discounting Calculations	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
Year	Grand Total Cost from Table 7 (row (i), column (d))	Admin	Operation	Maintenance	Replacement	Other	Total Costs (a)+…+(f)	Discount Factor	Discounted Costs (g) x (h)
2009	$629,106	$0	$0	$0	$0	$0	$629,106	1.00	$629,106
2010	$5,633,006	$0	$0	$0	$0	$0	$5,633,006	0.94	$5,311,925
2011	$6,269,240	$0	$0	$0	$0	$0	$6,269,240	0.89	$5,579,623
2012	$6,269,240	$108,850	$108,850	$0	$0	$0	$6,486,940	0.84	$5,449,029
2013	$5,780,983	$239,470	$174,160	$0	$0	$0	$6,194,613	0.79	$4,906,134
2014	$0	$239,470	$174,160	$21,770	$0	$0	$435,400	0.75	$325,244
2015		$239,470	$174,160	$21,770	$0	$0	$435,400	0.71	$306,957
2016		$239,470	$174,160	$21,770	$0	$0	$435,400	0.67	$289,541
2017		$239,470	$174,160	$21,770	$0	$0	$435,400	0.63	$272,996
2018		$239,470	$174,160	$21,770	$0	$0	$435,400	0.59	$257,757
2019		$239,470	$174,160	$21,770	$0	$0	$435,400	0.56	$242,953
2020		$239,470	$174,160	$21,770	$0	$0	$435,400	0.53	$229,456
2021		$239,470	$174,160	$21,770	$0	$0	$435,400	0.50	$216,394
2022		$239,470	$174,160	$21,770	$0	$0	$435,400	0.47	$204,203
2023		$239,470	$174,160	$21,770	$0	$0	$435,400	0.44	$192,447
2024		$239,470	$174,160	$21,770	$0	$0	$435,400	0.42	$181,562
2025		$239,470	$174,160	$21,770	$0	$0	$435,400	0.39	$169,806
2026		$239,470	$174,160	$21,770	$0	$0	$435,400	0.37	$161,533
2027		$239,470	$174,160	$21,770	$0	$0	$435,400	0.35	$152,390
2028		$239,470	$174,160	$21,770	$0	$0	$435,400	0.33	$144,117
2029		$239,470	$174,160	$21,770	$0	$0	$435,400	0.31	$135,845
2030		$239,470	$174,160	$21,770	$0	$0	$435,400	0.29	$128,008
2031		$239,470	$174,160	$71,770	$0	$0	$485,400	0.28	$134,941
2032		$239,470	$174,160	$21,770	$0	$0	$435,400	0.26	$114,075
2033		$239,470	$174,160	$21,770	$0	$0	$435,400	0.25	$107,544
2034		$239,470	$174,160	$21,770	$0	$0	$435,400	0.23	$101,448
2035		$239,470	$174,160	$21,770	$0	$0	$435,400	0.22	$95,788
2036		$239,470	$174,160	$21,770	$0	$0	$435,400	0.21	$90,128
2037		$239,470	$174,160	$21,770	$0	$0	$435,400	0.20	$85,338
2038		$239,470	$174,160	$21,770	$0	$0	$435,400	0.19	$80,549
2039		$239,470	$174,160	$21,770	$0	$0	$435,400	0.17	$75,760
2040		$239,470	$174,160	$21,770	$0	$0	$435,400	0.16	$71,406
2041		$239,470	$174,160	$21,770	$0	$0	$435,400	0.16	$67,487
2042		$239,470	$174,160	$21,770	$0	$0	$435,400	0.15	$63,568
2043		$239,470	$174,160	$21,770	$0	$0	$435,400	0.14	$60,085
2044		$239,470	$174,160	$21,770	$0	$0	$435,400	0.13	$56,602
2045		$239,470	$174,160	$21,770	$0	$0	$435,400	0.12	$53,554
2046		$239,470	$174,160	$21,770	$0	$0	$435,400	0.12	$50,506
2047		$239,470	$174,160	$21,770	$0	$0	$435,400	0.11	$47,459
2048		$239,470	$174,160	$21,770	$0	$0	$435,400	0.10	$44,846
2049		$239,470	$174,160	$21,770	$0	$0	$435,400	0.10	$42,234
2050		$239,470	$174,160	$21,770	$0	$0	$435,400	0.09	$40,057
2051		$239,470	$174,160	$71,770	$0	$0	$485,400	0.09	$42,230
2052		$239,470	$174,160	$21,770	$0	$0	$435,400	0.08	$35,703
2053		$239,470	$174,160	$21,770	$0	$0	$435,400	0.08	$33,526
2054		$239,470	$174,160	$21,770	$0	$0	$435,400	0.07	$31,784
2055		$239,470	$174,160	$21,770	$0	$0	$435,400	0.07	$30,043
2056		$239,470	$174,160	$21,770	$0	$0	$435,400	0.07	$28,301
2057		$239,470	$174,160	$21,770	$0	$0	$435,400	0.06	$26,559
2058		$239,470	$174,160	$21,770	$0	$0	$435,400	0.06	$25,253
2059		$239,470	$174,160	$21,770	$0	$0	$435,400	0.05	$23,637
2060		$239,470	$174,160	$21,770	$0	$0	$435,400	0.05	$22,299
Project Life									
								Total Present Value of Discounted Costs (Sum of Column (i))	
								Transfer to Table 20, Column (c), Exhibit F: Proposal Costs and Benefit Summaries	**$27,269,735**

Comments: *O&M Cost is the avaerage ($435,400/yr) of the range of ($290,300/yr to $580,500/yr) from the conceptual report. The costs in the first year are expected to be lower as the treatment system will not be completely operational. Project assumes Replacement as follows: Mechanical Equipment every 20 years, all filters will be replaced throught the year and some UV bulb replacements each year. Note the first year of O&M cost is reduced by 50% because it is only Phase 1.*

Table 7.D.2 - Annual Water Supply Benefits (2009 dollars)

Project: Penmar Water Quality Improvement and Runoff Reuse Project

(a) Year	*(b) Type of Benefit: Avoided imports* *(C) Measure of Benefit [Unit]: AF per year* (d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	*(b) Type of Benefit:* *(C) Measure of Benefit [Unit]:* (d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	*(b) Type of Benefit:* *(C) Measure of Benefit [Unit]:* (d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	*Discounting Calculations for Economic Benefits* (h) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009			0.0		$0			0		$0			0		$0	**$0**	**1.000**	**$0**
2010			0.0		$0			0		$0			0		$0	**$0**	**0.943**	**$0**
2011			0.0		$0			0		$0			0		$0	**$0**	**0.890**	**$0**
2012			0.0		$0			0		$0			0		$0	**$0**	**0.840**	**$0**
2013	-126.5	0.0	126.5	$793	$100,315			0		$0			0		$0	**$100,315**	**0.792**	**$79,449**
2014	-126.5	0.0	126.5	$826	$104,489			0		$0			0		$0	**$104,489**	**0.747**	**$78,053**
2015	-126.5	0.0	126.5	$856	$108,284			0		$0			0		$0	**$108,284**	**0.705**	**$76,340**
2016	-126.5	0.0	126.5	$887	$112,206			0		$0			0		$0	**$112,206**	**0.665**	**$74,617**
2017	-126.5	0.0	126.5	$919	$116,254			0		$0			0		$0	**$116,254**	**0.627**	**$72,891**
2018	-126.5	0.0	126.5	$952	$120,428			0		$0			0		$0	**$120,428**	**0.592**	**$71,293**
2019	-126.5	0.0	126.5	$987	$124,856			0		$0			0		$0	**$124,856**	**0.558**	**$69,669**
2020	-126.5	0.0	126.5	$1,023	$129,410			0		$0			0		$0	**$129,410**	**0.527**	**$68,199**
2021	-126.5	0.0	126.5	$1,032	$130,548			0		$0			0		$0	**$130,548**	**0.497**	**$64,882**
2022	-126.5	0.0	126.5	$1,043	$131,940			0		$0			0		$0	**$131,940**	**0.469**	**$61,880**
2023	-126.5	0.0	126.5	$1,053	$133,205			0		$0			0		$0	**$133,205**	**0.442**	**$58,876**
2024	-126.5	0.0	126.5	$1,063	$134,470			0		$0			0		$0	**$134,470**	**0.417**	**$56,074**
2025	-126.5	0.0	126.5	$1,073	$135,735			0		$0			0		$0	**$135,735**	**0.390**	**$52,936**
2026	-126.5	0.0	126.5	$1,084	$137,126			0		$0			0		$0	**$137,126**	**0.371**	**$50,874**
2027	-126.5	0.0	126.5	$1,095	$138,518			0		$0			0		$0	**$138,518**	**0.350**	**$48,481**
2028	-126.5	0.0	126.5	$1,105	$139,783			0		$0			0		$0	**$139,783**	**0.331**	**$46,268**
2029	-126.5	0.0	126.5	$1,116	$141,174			0		$0			0		$0	**$141,174**	**0.312**	**$44,046**
2030	-126.5	0.0	126.5	$1,127	$142,566			0		$0			0		$0	**$142,566**	**0.294**	**$41,914**
2031	-126.5	0.0	126.5	$1,138	$143,957			0		$0			0		$0	**$143,957**	**0.278**	**$40,020**
2032	-126.5	0.0	126.5	$1,149	$145,349			0		$0			0		$0	**$145,349**	**0.262**	**$38,081**
2033	-126.5	0.0	126.5	$1,161	$146,867			0		$0			0		$0	**$146,867**	**0.247**	**$36,276**
2034	-126.5	0.0	126.5	$1,172	$148,258			0		$0			0		$0	**$148,258**	**0.233**	**$34,544**
2035	-126.5	0.0	126.5	$1,184	$149,776			0		$0			0		$0	**$149,776**	**0.220**	**$32,951**
2036	-126.5	0.0	126.5	$1,195	$151,168			0		$0			0		$0	**$151,168**	**0.207**	**$31,292**
2037	-126.5	0.0	126.5	$1,207	$152,686			0		$0			0		$0	**$152,686**	**0.196**	**$29,926**
2038	-126.5	0.0	126.5	$1,219	$154,204			0		$0			0		$0	**$154,204**	**0.185**	**$28,528**
2039	-126.5	0.0	126.5	$1,231	$155,722			0		$0			0		$0	**$155,722**	**0.174**	**$27,096**
2040	-126.5	0.0	126.5	$1,243	$157,240			0		$0			0		$0	**$157,240**	**0.164**	**$25,787**
2041	-126.5	0.0	126.5	$1,255	$158,758			0		$0			0		$0	**$158,758**	**0.155**	**$24,607**
2042	-126.5	0.0	126.5	$1,267	$160,276			0		$0			0		$0	**$160,276**	**0.146**	**$23,400**
2043	-126.5	0.0	126.5	$1,280	$161,920			0		$0			0		$0	**$161,920**	**0.138**	**$22,345**
2044	-126.5	0.0	126.5	$1,292	$163,438			0		$0			0		$0	**$163,438**	**0.130**	**$21,247**
2045	-126.5	0.0	126.5	$1,305	$165,083			0		$0			0		$0	**$165,083**	**0.123**	**$20,305**
2046	-126.5	0.0	126.5	$1,318	$166,727			0		$0			0		$0	**$166,727**	**0.116**	**$19,340**
2047	-126.5	0.0	126.5	$1,330	$168,245			0		$0			0		$0	**$168,245**	**0.109**	**$18,339**
2048	-126.5	0.0	126.5	$1,344	$170,016			0		$0			0		$0	**$170,016**	**0.103**	**$17,512**
2049	-126.5	0.0	126.5	$1,357	$171,661			0		$0			0		$0	**$171,661**	**0.097**	**$16,651**
2050	-126.5	0.0	126.5	$1,370	$173,305			0		$0			0		$0	**$173,305**	**0.092**	**$15,944**
2051	-126.5	0.0	126.5	$1,383	$174,950			0		$0			0		$0	**$174,950**	**0.087**	**$15,221**
2052	-126.5	0.0	126.5	$1,397	$176,721			0		$0			0		$0	**$176,721**	**0.082**	**$14,491**
2053	-126.5	0.0	126.5	$1,411	$178,492			0		$0			0		$0	**$178,492**	**0.077**	**$13,744**
2054	-126.5	0.0	126.5	$1,424	$180,136			0		$0			0		$0	**$180,136**	**0.073**	**$13,150**
2055	-126.5	0.0	126.5	$1,439	$182,034			0		$0			0		$0	**$182,034**	**0.069**	**$12,560**
2056	-126.5	0.0	126.5	$1,452	$183,678			0		$0			0		$0	**$183,678**	**0.065**	**$11,939**
2057	-126.5	0.0	126.5	$1,467	$185,576			0		$0			0		$0	**$185,576**	**0.061**	**$11,320**
2058	-126.5	0.0	126.5	$1,481	$187,347			0		$0			0		$0	**$187,347**	**0.058**	**$10,866**
2059	-126.5	0.0	126.5	$1,496	$189,244			0		$0			0		$0	**$189,244**	**0.054**	**$10,274**
2060	-126.5	0.0	126.5	$1,510	$191,015			0		$0			0		$0	**$191,015**	**0.051**	**$9,783**

Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):	$1,764,283
Project Allocation:	100.0%
Total Present Value of Discounted Benefits (Monetized Benefits):	**$1,764,283**

Narrative description of benefits: *potable water supply is preserved for use other than irrigation*	**Narrative description of benefits:**	**Narrative description of benefits:**

Comments: *Assume lifespan through 2060 for the project. Water quantity estimate based on treating rain water and dry weather flows. Water rate is MWD Teir 1 Rate ($701). Based TMDL model assumprtions on diversion assumptions of 0.44 cfs dry weather flow and 10 storms per year filling the tank, the system would capture 324 AF/year however to account for variability in storm weather pattern and water quality we will only count 40% of the for the water supply calculations. We will also deduct 3.5 AFY to account for the water the is used in Santa Monica's Benefit analysis (1523 HCF/year ~ 3.5 AFY)*

Table 7.D.3 - Annual Costs of Avoided Projects (2009 dollars)

Project: Penmar Water Quality Improvement and Runoff Reuse Project

(a) Year	*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Discounting Calculations for Economic Benefits*		
	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(e) Total Avoided Costs for All Alts ($)	(f) Discount Value	(g) Discounted Benefits [e x f]
2009				$0				$0				$0	**$0**	**1.000**	**$0**
2010				$0				$0				$0	**$0**	**0.943**	**$0**
2011				$0				$0				$0	**$0**	**0.890**	**$0**
2012				$0				$0				$0	**$0**	**0.840**	**$0**
2013				$0				$0				$0	**$0**	**0.792**	**$0**
2014				$0				$0				$0	**$0**	**0.747**	**$0**
2015				$0				$0				$0	**$0**	**0.705**	**$0**
2016				$0				$0				$0	**$0**	**0.665**	**$0**
2017				$0				$0				$0	**$0**	**0.627**	**$0**
2018				$0				$0				$0	**$0**	**0.592**	**$0**
2019				$0				$0				$0	**$0**	**0.558**	**$0**
2020				$0				$0				$0	**$0**	**0.527**	**$0**
2021				$0				$0				$0	**$0**	**0.497**	**$0**
2022				$0				$0				$0	**$0**	**0.469**	**$0**
2023				$0				$0				$0	**$0**	**0.442**	**$0**
2024				$0				$0				$0	**$0**	**0.417**	**$0**
2025				$0				$0				$0	**$0**	**0.390**	**$0**
2026				$0				$0				$0	**$0**	**0.371**	**$0**
2027				$0				$0				$0	**$0**	**0.350**	**$0**
2028				$0				$0				$0	**$0**	**0.331**	**$0**
2029				$0				$0				$0	**$0**	**0.312**	**$0**
2030				$0				$0				$0	**$0**	**0.294**	**$0**
2031				$0				$0				$0	**$0**	**0.278**	**$0**
2032				$0				$0				$0	**$0**	**0.262**	**$0**
2033				$0				$0				$0	**$0**	**0.247**	**$0**
2034				$0				$0				$0	**$0**	**0.233**	**$0**
2035				$0				$0				$0	**$0**	**0.220**	**$0**
2036				$0				$0				$0	**$0**	**0.207**	**$0**
2037				$0				$0				$0	**$0**	**0.196**	**$0**
2038				$0				$0				$0	**$0**	**0.185**	**$0**
2039				$0				$0				$0	**$0**	**0.174**	**$0**
2040				$0				$0				$0	**$0**	**0.164**	**$0**
2041				$0				$0				$0	**$0**	**0.155**	**$0**
2042				$0				$0				$0	**$0**	**0.146**	**$0**
2043				$0				$0				$0	**$0**	**0.138**	**$0**
2044				$0				$0				$0	**$0**	**0.130**	**$0**
2045				$0				$0				$0	**$0**	**0.123**	**$0**
2046				$0				$0				$0	**$0**	**0.116**	**$0**
2047				$0				$0				$0	**$0**	**0.109**	**$0**
2048				$0				$0				$0	**$0**	**0.103**	**$0**
2049				$0				$0				$0	**$0**	**0.097**	**$0**
2050				$0				$0				$0	**$0**	**0.092**	**$0**
2051				$0				$0				$0	**$0**	**0.087**	**$0**
2052				$0				$0				$0	**$0**	**0.082**	**$0**
2053				$0				$0				$0	**$0**	**0.077**	**$0**
2054				$0				$0				$0	**$0**	**0.073**	**$0**
2055				$0				$0				$0	**$0**	**0.069**	**$0**
2056				$0				$0				$0	**$0**	**0.065**	**$0**
2057				$0				$0				$0	**$0**	**0.061**	**$0**
2058				$0				$0				$0	**$0**	**0.058**	**$0**
2059				$0				$0				$0	**$0**	**0.054**	**$0**
2060				$0				$0				$0	**$0**	**0.051**	**$0**
													Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
													Project Allocation:		100.0%
													Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Table 7.D.4 - Annual Other Water Supply Benefits (2009 dollars)

Project: Penmar Water Quality Improvement and Runoff Reuse Project

(a) Year	*(b) Type of Benefit:* *(C) Description of Benefit:*	*(b) Type of Benefit:* *(C) Description of Benefit:*	*(b) Type of Benefit:* *(C) Description of Benefit:*	*Discounting Calculations for Economic Benefits*		
	(d) Annual Benefit ($)	(d) Annual Benefit ($)	(d) Annual Benefit ($)	(d) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009	$0	$0	$0	**$0**	**1.000**	**$0**
2010	$0	$0	$0	**$0**	**0.943**	**$0**
2011	$0	$0	$0	**$0**	**0.890**	**$0**
2012	$0	$0	$0	**$0**	**0.840**	**$0**
2013	$0	$0	$0	**$0**	**0.792**	**$0**
2014	$0	$0	$0	**$0**	**0.747**	**$0**
2015	$0	$0	$0	**$0**	**0.705**	**$0**
2016	$0	$0	$0	**$0**	**0.665**	**$0**
2017	$0	$0	$0	**$0**	**0.627**	**$0**
2018	$0	$0	$0	**$0**	**0.592**	**$0**
2019	$0	$0	$0	**$0**	**0.558**	**$0**
2020	$0	$0	$0	**$0**	**0.527**	**$0**
2021	$0	$0	$0	**$0**	**0.497**	**$0**
2022	$0	$0	$0	**$0**	**0.469**	**$0**
2023	$0	$0	$0	**$0**	**0.442**	**$0**
2024	$0	$0	$0	**$0**	**0.417**	**$0**
2025	$0	$0	$0	**$0**	**0.390**	**$0**
2026	$0	$0	$0	**$0**	**0.371**	**$0**
2027	$0	$0	$0	**$0**	**0.350**	**$0**
2028	$0	$0	$0	**$0**	**0.331**	**$0**
2029	$0	$0	$0	**$0**	**0.312**	**$0**
2030	$0	$0	$0	**$0**	**0.294**	**$0**
2031	$0	$0	$0	**$0**	**0.278**	**$0**
2032	$0	$0	$0	**$0**	**0.262**	**$0**
2033	$0	$0	$0	**$0**	**0.247**	**$0**
2034	$0	$0	$0	**$0**	**0.233**	**$0**
2035	$0	$0	$0	**$0**	**0.220**	**$0**
2036	$0	$0	$0	**$0**	**0.207**	**$0**
2037	$0	$0	$0	**$0**	**0.196**	**$0**
2038	$0	$0	$0	**$0**	**0.185**	**$0**
2039	$0	$0	$0	**$0**	**0.174**	**$0**
2040	$0	$0	$0	**$0**	**0.164**	**$0**
2041	$0	$0	$0	**$0**	**0.155**	**$0**
2042	$0	$0	$0	**$0**	**0.146**	**$0**
2043	$0	$0	$0	**$0**	**0.138**	**$0**
2044	$0	$0	$0	**$0**	**0.130**	**$0**
2045	$0	$0	$0	**$0**	**0.123**	**$0**
2046	$0	$0	$0	**$0**	**0.116**	**$0**
2047	$0	$0	$0	**$0**	**0.109**	**$0**
2048	$0	$0	$0	**$0**	**0.103**	**$0**
2049	$0	$0	$0	**$0**	**0.097**	**$0**
2050	$0	$0	$0	**$0**	**0.092**	**$0**
2051	$0	$0	$0	**$0**	**0.087**	**$0**
2052	$0	$0	$0	**$0**	**0.082**	**$0**
2053	$0	$0	$0	**$0**	**0.077**	**$0**
2054	$0	$0	$0	**$0**	**0.073**	**$0**
2055	$0	$0	$0	**$0**	**0.069**	**$0**
2056	$0	$0	$0	**$0**	**0.065**	**$0**
2057	$0	$0	$0	**$0**	**0.061**	**$0**
2058	$0	$0	$0	**$0**	**0.058**	**$0**
2059	$0	$0	$0	**$0**	**0.054**	**$0**
2060	$0	$0	$0	**$0**	**0.051**	**$0**
			Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):			$0
			Project Allocation:			100.0%
			Total Present Value of Discounted Benefits (Monetized Benefits):			**$0**

Table 7.D.5 - Total Water Supply Benefits (2009 dollars)			
Project: Penmar Water Quality Improvement and Runoff Reuse Project			
(a) Total Discounted Water Supply Benefits	**(b) Total Discounted Avoided Project Costs**	**(c) Other Discounted Water Supply Benefits**	**(d) Total Value of Discounted Benefits [a + c] or [b + c]**
$1,764,283	$0	$0	**$1,764,283**
Comments:			

APPENDIX E

Model Equestrian Center –

City of Rolling Hills Estates

Table 7.E.1 - Annual Cost of Project
(All costs should be in 2009 dollars)
Project: Model Equestrian Center

Year	Initial Costs	Operations and Maintenance Costs						Discounting Calculations		Original values based on constant 2009 $				
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(b)	(c)	(d)	(e)	(f)
	Grand Total Cost from Table 7 (row (i), column (d))	Admin	Operation	Maintenance	Replacement	Other	Total Costs (a)+…+(f)	Discount Factor	Discounted Costs (g) x (h)	Admin	Operation	Maintenance	Replacement	Other
2009	$0					$0	$0	1.000	$0					
2010	$0					$0	$0	0.943	$0					
2011	$0					$0	$0	0.890	$0					
2012	$0					$0	$0	0.840	$0					
2013	$0	$19,074	$240,166	$12,500	$800	$0	$272,539	0.792	$215,877	$19,074	$240,166	$12,500	$800	$0
2014	$0	$19,074	$240,166	$12,500	$800	$0	$272,539	0.747	$203,657	$19,074	$240,166	$12,500	$800	$0
2015		$19,074	$240,166	$12,500	$800	$0	$272,539	0.705	$192,130	$19,074	$240,166	$12,500	$800	$0
2016		$19,074	$240,166	$12,500	$800	$0	$272,539	0.665	$181,254	$19,074	$240,166	$12,500	$800	$0
2017		$19,074	$240,166	$12,500	$800	$0	$272,539	0.627	$170,995	$19,074	$240,166	$12,500	$800	$0
2018		$19,074	$240,166	$12,500	$800	$0	$272,539	0.592	$161,316	$19,074	$240,166	$12,500	$800	$0
2019		$19,074	$240,166	$12,500	$800	$0	$272,539	0.558	$152,185	$19,074	$240,166	$12,500	$800	$0
2020		$19,074	$240,166	$12,500	$800	$0	$272,539	0.527	$143,570	$19,074	$240,166	$12,500	$800	$0
2021		$19,074	$240,166	$12,500	$800	$0	$272,539	0.497	$135,444	$19,074	$240,166	$12,500	$800	$0
2022		$19,074	$240,166	$12,500	$800	$0	$272,539	0.469	$127,777	$19,074	$240,166	$12,500	$800	$0
2023		$19,074	$240,166	$12,500	$800	$0	$272,539	0.442	$120,544	$19,074	$240,166	$12,500	$800	$0
2024		$19,074	$240,166	$12,500	$800	$0	$272,539	0.417	$113,721	$19,074	$240,166	$12,500	$800	$0
2025		$19,074	$240,166	$12,500	$800	$0	$272,539	0.394	$107,284	$19,074	$240,166	$12,500	$800	$0
2026		$19,074	$240,166	$12,500	$800	$0	$272,539	0.371	$101,211	$19,074	$240,166	$12,500	$800	$0
2027		$19,074	$240,166	$12,500	$800	$0	$272,539	0.350	$95,482	$19,074	$240,166	$12,500	$800	$0
2028		$19,074	$240,166	$12,500	$800	$0	$272,539	0.331	$90,078	$19,074	$240,166	$12,500	$800	$0
2029		$19,074	$240,166	$12,500	$800	$0	$272,539	0.312	$84,979	$19,074	$240,166	$12,500	$800	$0
2030		$19,074	$240,166	$12,500	$800	$0	$272,539	0.294	$80,169	$19,074	$240,166	$12,500	$800	$0
2031		$19,074	$240,166	$12,500	$800	$0	$272,539	0.278	$75,631	$19,074	$240,166	$12,500	$800	$0
2032		$19,074	$240,166	$12,500	$800	$0	$272,539	0.262	$71,350	$19,074	$240,166	$12,500	$800	$0
2033		$19,074	$240,166	$12,500	$800	$0	$272,539	0.247	$67,311	$19,074	$240,166	$12,500	$800	$0
2034		$19,074	$240,166	$12,500	$800	$0	$272,539	0.233	$63,501	$19,074	$240,166	$12,500	$800	$0
2035		$19,074	$240,166	$12,500	$800	$0	$272,539	0.220	$59,907	$19,074	$240,166	$12,500	$800	$0
2036		$19,074	$240,166	$12,500	$800	$0	$272,539	0.207	$56,516	$19,074	$240,166	$12,500	$800	$0
2037		$19,074	$240,166	$12,500	$800	$0	$272,539	0.196	$53,317	$19,074	$240,166	$12,500	$800	$0
2038		$19,074	$240,166	$12,500	$800	$0	$272,539	0.185	$50,299	$19,074	$240,166	$12,500	$800	$0
2039		$19,074	$240,166	$12,500	$800	$0	$272,539	0.174	$47,452	$19,074	$240,166	$12,500	$800	$0
2040		$19,074	$240,166	$12,500	$800	$0	$272,539	0.164	$44,766	$19,074	$240,166	$12,500	$800	$0
2041		$19,074	$240,166	$12,500	$800	$0	$272,539	0.155	$42,232	$19,074	$240,166	$12,500	$800	$0
2042		$19,074	$240,166	$12,500	$800	$0	$272,539	0.146	$39,842	$19,074	$240,166	$12,500	$800	$0
2043		$19,074	$240,166	$12,500	$800	$0	$272,539	0.138	$37,586	$19,074	$240,166	$12,500	$800	$0
2044		$19,074	$240,166	$12,500	$800	$0	$272,539	0.130	$35,459	$19,074	$240,166	$12,500	$800	$0
2045		$19,074	$240,166	$12,500	$800	$0	$272,539	0.123	$33,452	$19,074	$240,166	$12,500	$800	$0
2046		$19,074	$240,166	$12,500	$800	$0	$272,539	0.116	$31,558	$19,074	$240,166	$12,500	$800	$0
2047		$19,074	$240,166	$12,500	$800	$0	$272,539	0.109	$29,772	$19,074	$240,166	$12,500	$800	$0
2048		$19,074	$240,166	$12,500	$800	$0	$272,539	0.103	$28,087	$19,074	$240,166	$12,500	$800	$0
2049		$19,074	$240,166	$12,500	$800	$0	$272,539	0.097	$26,497	$19,074	$240,166	$12,500	$800	$0
2050		$19,074	$240,166	$12,500	$800	$0	$272,539	0.092	$24,997	$19,074	$240,166	$12,500	$800	$0
2051		$19,074	$240,166	$12,500	$800	$0	$272,539	0.087	$23,582	$19,074	$240,166	$12,500	$800	$0
2052		$19,074	$240,166	$12,500	$800	$0	$272,539	0.082	$22,247	$19,074	$240,166	$12,500	$800	$0
2053		$19,074	$240,166	$12,500	$800	$0	$272,539	0.077	$20,988	$19,074	$240,166	$12,500	$800	$0
2054		$19,074	$240,166	$12,500	$800	$0	$272,539	0.073	$19,800	$19,074	$240,166	$12,500	$800	$0
2055		$19,074	$240,166	$12,500	$800	$0	$272,539	0.069	$18,679	$19,074	$240,166	$12,500	$800	$0
2056		$19,074	$240,166	$12,500	$800	$0	$272,539	0.065	$17,622	$19,074	$240,166	$12,500	$800	$0
2057		$19,074	$240,166	$12,500	$800	$0	$272,539	0.061	$16,624	$19,074	$240,166	$12,500	$800	$0
2058		$19,074	$240,166	$12,500	$800	$0	$272,539	0.058	$15,683	$19,074	$240,166	$12,500	$800	$0
2059		$19,074	$240,166	$12,500	$800	$0	$272,539	0.054	$14,796	$19,074	$240,166	$12,500	$800	$0
2060		$19,074	$240,166	$12,500	$800	$0	$272,539	0.051	$13,958	$19,074	$240,166	$12,500	$800	$0
	Total Present Value of Discounted Costs (Sum of Column (i))													
Project Life	Transfer to Table 20, Column (c), Exhibit F: Proposal Costs and Benefit Summaries								**$3,581,185**					

Comments: *Administration and operation costs from 2009-10 facility bidget scaled by factor of 0.35 to represent new portion of facility (excluding electricity and water which are addressed in WQ & other benefits sheet) plus additional annual maintenance cost of $5,000 to maintain retrofit areas. Life of project estimated to be 50 years.*

Table 7.E.2 - Annual Water Supply Benefits (2009 dollars)

Project: Model Equestrian Center

	(b) Type of Benefit: Avoided Cost of Imported Watrer *(C) Measure of Benefit [Unit]: Acre-Feet per year*					*(b) Type of Benefit:* *(C) Measure of Benefit [Unit]:*					*(b) Type of Benefit:* *(C) Measure of Benefit [Unit]:*					*Discounting Calculations for Economic Benefits*		
(a) Year	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(h) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009			0		$0			0		$0			0		$0	**$0**	**1.000**	**$0**
2010			0		$0			0		$0			0		$0	**$0**	**0.943**	**$0**
2011			0		$0			0		$0			0		$0	**$0**	**0.890**	**$0**
2012			0		$0			0		$0			0		$0	**$0**	**0.840**	**$0**
2013	-0.6	0	0.6	$793	$476			0		$0			0		$0	**$476**	**0.792**	**$377**
2014	-0.6	0	0.6	$826	$496			0		$0			0		$0	**$496**	**0.747**	**$370**
2015	-0.6	0	0.6	$856	$514			0		$0			0		$0	**$514**	**0.705**	**$362**
2016	-0.6	0	0.6	$887	$532			0		$0			0		$0	**$532**	**0.665**	**$354**
2017	-0.6	0	0.6	$919	$551			0		$0			0		$0	**$551**	**0.627**	**$346**
2018	-0.6	0	0.6	$952	$571			0		$0			0		$0	**$571**	**0.592**	**$338**
2019	-0.6	0	0.6	$987	$592			0		$0			0		$0	**$592**	**0.558**	**$330**
2020	-0.6	0	0.6	$1,023	$614			0		$0			0		$0	**$614**	**0.527**	**$323**
2021	-0.6	0	0.6	$1,032	$619			0		$0			0		$0	**$619**	**0.497**	**$308**
2022	-0.6	0	0.6	$1,043	$626			0		$0			0		$0	**$626**	**0.469**	**$294**
2023	-0.6	0	0.6	$1,053	$632			0		$0			0		$0	**$632**	**0.442**	**$279**
2024	-0.6	0	0.6	$1,063	$638			0		$0			0		$0	**$638**	**0.417**	**$266**
2025	-0.6	0	0.6	$1,073	$644			0		$0			0		$0	**$644**	**0.390**	**$251**
2026	-0.6	0	0.6	$1,084	$650			0		$0			0		$0	**$650**	**0.371**	**$241**
2027	-0.6	0	0.6	$1,095	$657			0		$0			0		$0	**$657**	**0.350**	**$230**
2028	-0.6	0	0.6	$1,105	$663			0		$0			0		$0	**$663**	**0.331**	**$219**
2029	-0.6	0	0.6	$1,116	$670			0		$0			0		$0	**$670**	**0.312**	**$209**
2030	-0.6	0	0.6	$1,127	$676			0		$0			0		$0	**$676**	**0.294**	**$199**
2031	-0.6	0	0.6	$1,138	$683			0		$0			0		$0	**$683**	**0.278**	**$190**
2032	-0.6	0	0.6	$1,149	$689			0		$0			0		$0	**$689**	**0.262**	**$181**
2033	-0.6	0	0.6	$1,161	$697			0		$0			0		$0	**$697**	**0.247**	**$172**
2034	-0.6	0	0.6	$1,172	$703			0		$0			0		$0	**$703**	**0.233**	**$164**
2035	-0.6	0	0.6	$1,184	$710			0		$0			0		$0	**$710**	**0.220**	**$156**
2036	-0.6	0	0.6	$1,195	$717			0		$0			0		$0	**$717**	**0.207**	**$148**
2037	-0.6	0	0.6	$1,207	$724			0		$0			0		$0	**$724**	**0.196**	**$142**
2038	-0.6	0	0.6	$1,219	$731			0		$0			0		$0	**$731**	**0.185**	**$135**
2039	-0.6	0	0.6	$1,231	$739			0		$0			0		$0	**$739**	**0.174**	**$129**
2040	-0.6	0	0.6	$1,243	$746			0		$0			0		$0	**$746**	**0.164**	**$122**
2041	-0.6	0	0.6	$1,255	$753			0		$0			0		$0	**$753**	**0.155**	**$117**
2042	-0.6	0	0.6	$1,267	$760			0		$0			0		$0	**$760**	**0.146**	**$111**
2043	-0.6	0	0.6	$1,280	$768			0		$0			0		$0	**$768**	**0.138**	**$106**
2044	-0.6	0	0.6	$1,292	$775			0		$0			0		$0	**$775**	**0.130**	**$101**
2045	-0.6	0	0.6	$1,305	$783			0		$0			0		$0	**$783**	**0.123**	**$96**
2046	-0.6	0	0.6	$1,318	$791			0		$0			0		$0	**$791**	**0.116**	**$92**
2047	-0.6	0	0.6	$1,330	$798			0		$0			0		$0	**$798**	**0.109**	**$87**
2048	-0.6	0	0.6	$1,344	$806			0		$0			0		$0	**$806**	**0.103**	**$83**
2049	-0.6	0	0.6	$1,357	$814			0		$0			0		$0	**$814**	**0.097**	**$79**
2050	-0.6	0	0.6	$1,370	$822			0		$0			0		$0	**$822**	**0.092**	**$76**
2051	-0.6	0	0.6	$1,383	$830			0		$0			0		$0	**$830**	**0.087**	**$72**
2052	-0.6	0	0.6	$1,397	$838			0		$0			0		$0	**$838**	**0.082**	**$69**
2053	-0.6	0	0.6	$1,411	$847			0		$0			0		$0	**$847**	**0.077**	**$65**
2054	-0.6	0	0.6	$1,424	$854			0		$0			0		$0	**$854**	**0.073**	**$62**
2055	-0.6	0	0.6	$1,439	$863			0		$0			0		$0	**$863**	**0.069**	**$60**
2056	-0.6	0	0.6	$1,452	$871			0		$0			0		$0	**$871**	**0.065**	**$57**
2057	-0.6	0	0.6	$1,467	$880			0		$0			0		$0	**$880**	**0.061**	**$54**
2058	-0.6	0	0.6	$1,481	$889			0		$0			0		$0	**$889**	**0.058**	**$52**
2059	-0.6	0	0.6	$1,496	$898			0		$0			0		$0	**$898**	**0.054**	**$49**
2060	-0.6	0	0.6	$1,510	$906			0		$0			0		$0	**$906**	**0.051**	**$46**

Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):	$8,368
Project Allocation:	100.0%
Total Present Value of Discounted Benefits (Monetized Benefits):	**$8,368**

Narrative description of benefits: *avoided potable water supply purchases due to wash water reuse and rainwater harvesting assuming that the average annual rainfall onto the barn can be caputred, i.e. 12 inches per year, and that 2/3 of wash water can be reused.*

Narrative description of benefits:

Narrative description of benefits:

Comments: Life of project estimated at 50 years

Table 7.E.3 - Annual Costs of Avoided Projects (2009 dollars)

Project: Model Equestrian Center

(a) Year	*Alternative (Avoided Project Name): Avoided Project Description:* (b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	*Alternative (Avoided Project Name): Avoided Project Description:* (b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	*Alternative (Avoided Project Name): Avoided Project Description:* (b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	*Discounting Calculations for Economic Benefits* (e) Total Avoided Costs for All Alts ($)	(f) Discount Value	(g) Discounted Benefits [e x f]
2009				$0				$0				$0	**$0**	**1.000**	**$0**
2010				$0				$0				$0	**$0**	**0.943**	**$0**
2011				$0				$0				$0	**$0**	**0.890**	**$0**
2012				$0				$0				$0	**$0**	**0.840**	**$0**
2013				$0				$0				$0	**$0**	**0.792**	**$0**
2014				$0				$0				$0	**$0**	**0.747**	**$0**
2015				$0				$0				$0	**$0**	**0.705**	**$0**
2016				$0				$0				$0	**$0**	**0.665**	**$0**
2017				$0				$0				$0	**$0**	**0.627**	**$0**
2018				$0				$0				$0	**$0**	**0.592**	**$0**
2019				$0				$0				$0	**$0**	**0.558**	**$0**
2020				$0				$0				$0	**$0**	**0.527**	**$0**
2021				$0				$0				$0	**$0**	**0.497**	**$0**
2022				$0				$0				$0	**$0**	**0.469**	**$0**
2023				$0				$0				$0	**$0**	**0.442**	**$0**
2024				$0				$0				$0	**$0**	**0.417**	**$0**
2025				$0				$0				$0	**$0**	**0.390**	**$0**
2026				$0				$0				$0	**$0**	**0.371**	**$0**
2027				$0				$0				$0	**$0**	**0.350**	**$0**
2028				$0				$0				$0	**$0**	**0.331**	**$0**
2029				$0				$0				$0	**$0**	**0.312**	**$0**
2030				$0				$0				$0	**$0**	**0.294**	**$0**
2031				$0				$0				$0	**$0**	**0.278**	**$0**
2032				$0				$0				$0	**$0**	**0.262**	**$0**
2033				$0				$0				$0	**$0**	**0.247**	**$0**
2034				$0				$0				$0	**$0**	**0.233**	**$0**
2035				$0				$0				$0	**$0**	**0.220**	**$0**
2036				$0				$0				$0	**$0**	**0.207**	**$0**
2037				$0				$0				$0	**$0**	**0.196**	**$0**
2038				$0				$0				$0	**$0**	**0.185**	**$0**
2039				$0				$0				$0	**$0**	**0.174**	**$0**
2040				$0				$0				$0	**$0**	**0.164**	**$0**
2041				$0				$0				$0	**$0**	**0.155**	**$0**
2042				$0				$0				$0	**$0**	**0.146**	**$0**
2043				$0				$0				$0	**$0**	**0.138**	**$0**
2044				$0				$0				$0	**$0**	**0.130**	**$0**
2045				$0				$0				$0	**$0**	**0.123**	**$0**
2046				$0				$0				$0	**$0**	**0.116**	**$0**
2047				$0				$0				$0	**$0**	**0.109**	**$0**
2048				$0				$0				$0	**$0**	**0.103**	**$0**
2049				$0				$0				$0	**$0**	**0.097**	**$0**
2050				$0				$0				$0	**$0**	**0.092**	**$0**
2051				$0				$0				$0	**$0**	**0.087**	**$0**
2052				$0				$0				$0	**$0**	**0.082**	**$0**
2053				$0				$0				$0	**$0**	**0.077**	**$0**
2054				$0				$0				$0	**$0**	**0.073**	**$0**
2055				$0				$0				$0	**$0**	**0.069**	**$0**
2056				$0				$0				$0	**$0**	**0.065**	**$0**
2057				$0				$0				$0	**$0**	**0.061**	**$0**
2058				$0				$0				$0	**$0**	**0.058**	**$0**
2059				$0				$0				$0	**$0**	**0.054**	**$0**
2060				$0				$0				$0	**$0**	**0.051**	**$0**
													Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
													Project Allocation:		100.0%
													Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Table 7.E.4 - Annual Other Water Supply Benefits (2009 dollars)

Project: Model Equestrian Center

	(b) Type of Benefit: *(C) Description of Benefit:*	*(b) Type of Benefit:* *(C) Description of Benefit:*	*(b) Type of Benefit:* *(C) Description of Benefit:*	*Discounting Calculations for Economic Benefits*		
(a) Year	(d) Annual Benefit ($)	(d) Annual Benefit ($)	(d) Annual Benefit ($)	(d) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009	$0	$0	$0	**$0**	**1.000**	**$0**
2010	$0	$0	$0	**$0**	**0.943**	**$0**
2011	$0	$0	$0	**$0**	**0.890**	**$0**
2012	$0	$0	$0	**$0**	**0.840**	**$0**
2013	$0	$0	$0	**$0**	**0.792**	**$0**
2014	$0	$0	$0	**$0**	**0.747**	**$0**
2015	$0	$0	$0	**$0**	**0.705**	**$0**
2016	$0	$0	$0	**$0**	**0.665**	**$0**
2017	$0	$0	$0	**$0**	**0.627**	**$0**
2018	$0	$0	$0	**$0**	**0.592**	**$0**
2019	$0	$0	$0	**$0**	**0.558**	**$0**
2020	$0	$0	$0	**$0**	**0.527**	**$0**
2021	$0	$0	$0	**$0**	**0.497**	**$0**
2022	$0	$0	$0	**$0**	**0.469**	**$0**
2023	$0	$0	$0	**$0**	**0.442**	**$0**
2024	$0	$0	$0	**$0**	**0.417**	**$0**
2025	$0	$0	$0	**$0**	**0.390**	**$0**
2026	$0	$0	$0	**$0**	**0.371**	**$0**
2027	$0	$0	$0	**$0**	**0.350**	**$0**
2028	$0	$0	$0	**$0**	**0.331**	**$0**
2029	$0	$0	$0	**$0**	**0.312**	**$0**
2030	$0	$0	$0	**$0**	**0.294**	**$0**
2031	$0	$0	$0	**$0**	**0.278**	**$0**
2032	$0	$0	$0	**$0**	**0.262**	**$0**
2033	$0	$0	$0	**$0**	**0.247**	**$0**
2034	$0	$0	$0	**$0**	**0.233**	**$0**
2035	$0	$0	$0	**$0**	**0.220**	**$0**
2036	$0	$0	$0	**$0**	**0.207**	**$0**
2037	$0	$0	$0	**$0**	**0.196**	**$0**
2038	$0	$0	$0	**$0**	**0.185**	**$0**
2039	$0	$0	$0	**$0**	**0.174**	**$0**
2040	$0	$0	$0	**$0**	**0.164**	**$0**
2041	$0	$0	$0	**$0**	**0.155**	**$0**
2042	$0	$0	$0	**$0**	**0.146**	**$0**
2043	$0	$0	$0	**$0**	**0.138**	**$0**
2044	$0	$0	$0	**$0**	**0.130**	**$0**
2045	$0	$0	$0	**$0**	**0.123**	**$0**
2046	$0	$0	$0	**$0**	**0.116**	**$0**
2047	$0	$0	$0	**$0**	**0.109**	**$0**
2048	$0	$0	$0	**$0**	**0.103**	**$0**
2049	$0	$0	$0	**$0**	**0.097**	**$0**
2050	$0	$0	$0	**$0**	**0.092**	**$0**
2051	$0	$0	$0	**$0**	**0.087**	**$0**
2052	$0	$0	$0	**$0**	**0.082**	**$0**
2053	$0	$0	$0	**$0**	**0.077**	**$0**
2054	$0	$0	$0	**$0**	**0.073**	**$0**
2055	$0	$0	$0	**$0**	**0.069**	**$0**
2056	$0	$0	$0	**$0**	**0.065**	**$0**
2057	$0	$0	$0	**$0**	**0.061**	**$0**
2058	$0	$0	$0	**$0**	**0.058**	**$0**
2059	$0	$0	$0	**$0**	**0.054**	**$0**
2060	$0	$0	$0	**$0**	**0.051**	**$0**
				Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
				Project Allocation:		100.0%
				Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Table 7.E.5 - Total Water Supply Benefits (2009 dollars)			
Project: Model Equestrian Center			
(a) Total Discounted Water Supply Benefits	**(b) Total Discounted Avoided Project Costs**	**(c) Other Discounted Water Supply Benefits**	**(d) Total Value of Discounted Benefits [a + c] or [b + c]**
$8,368	$0	$0	**$8,368**
Comments:			

APPENDIX F

16th Street Watershed Runoff Use Project – City of Santa Monica

Table 7.F.1 - Annual Cost of Project
(All costs should be in 2009 dollars)
Project: 16th Street Watershed Runoff Use Project

	Initial Costs	Operations and Maintenance Costs						Discounting Calculations		Original values (in constant 2009 dollars)	Original values (in constant 2009 dollars)	Inflation Factors		
Year	(a) Grand Total Cost from Table 7 (row (i), column (d))	(b) Admin	(c) Operation	(d) Maintenance	(e) Replacement	(f) Other	(g) Total Costs (a)+…+(f)	(h) Discount Factor	(i) Discounted Costs (g) x (h)	(d) Maintenance	Grand Total Cost from Table 7 (row (i), column (d))	Year	Implied GDP Implicit Price Index (2005=100)	Inflation Factor (2009=100)
2009							$ -	1.000	$ -	$ 2,500		**2009**	**109.614**	**1.00**
2010							$ -	0.943	$ -	$ 2,500		2010	110.491	1.01
2011	$ 40,660						$ 40,660	0.890	$ 36,187	$ 10,000		2011	111.596	1.02
2012	$ 681,950						$ 681,950	0.840	$ 572,578	$ 2,500		2012	113.27	1.03
2013	$ 822,233			$ 2,500			$ 824,733	0.792	$ 653,266	$ 2,500	$ 822,233	2013	114.969	1.05
2014	$ 820,108			$ 10,000			$ 830,108	0.747	$ 620,305	$ 10,000		2014	116.694	1.07
2015				$ 2,500			$ 2,500	0.705	$ 1,762	$ 2,500		2015	119.028	1.09
2016				$ 2,500			$ 2,500	0.665	$ 1,663	$ 2,500		2016	121.409	1.11
2017				$ 10,000			$ 10,000	0.627	$ 6,274	$ 10,000		2017	123.837	1.13
2018				$ 2,500			$ 2,500	0.592	$ 1,480	$ 2,500		2018	126.314	1.15
2019				$ 2,500			$ 2,500	0.558	$ 1,396	$ 2,500		2019	128.84	1.18
2020				$ 10,000			$ 10,000	0.527	$ 5,268	$ 10,000		2020	131.417	1.20
2021				$ 2,500			$ 2,500	0.497	$ 1,242	$ 2,500		2021	133.717	1.22
2022				$ 2,500			$ 2,500	0.469	$ 1,172	$ 2,500		2022	136.057	1.24
2023				$ 10,000			$ 10,000	0.442	$ 4,423	$ 10,000		2023	138.438	1.26
2024				$ 2,500			$ 2,500	0.417	$ 1,043	$ 2,500		2024	140.861	1.29
2025				$ 2,500			$ 2,500	0.394	$ 984	$ 2,500		2025	143.326	1.31
2026				$ 10,000			$ 10,000	0.371	$ 3,714	$ 10,000		2026	145.834	1.33
2027				$ 2,500			$ 2,500	0.350	$ 876	$ 2,500		2027	148.386	1.35
2028				$ 2,500			$ 2,500	0.331	$ 826	$ 2,500		2028	150.983	1.38
2029				$ 10,000			$ 10,000	0.312	$ 3,118	$ 10,000		2029	153.625	1.40
2030				$ 2,500			$ 2,500	0.294	$ 735	$ 2,500		2030	156.313	1.43
2031				$ 2,500			$ 2,500	0.278	$ 694	$ 2,500		2028	150.983	1.38
2032				$ 10,000			$ 10,000	0.262	$ 2,618	$ 10,000		2029	153.625	1.40
2033				$ 2,500			$ 2,500	0.247	$ 617	$ 2,500		2030	156.313	1.43
2034				$ 2,500			$ 2,500	0.233	$ 582	$ 2,500		2034	167.545	1.53
2035												2035	170.477	1.56
2036												2036	173.46	1.58
2037												2037	176.496	1.61
2038												2038	179.585	1.64
2039												2039	182.728	1.67
2040												2040	185.926	1.70
2041												2041	189.18	1.73
2042												2042	192.491	1.76
2043												2043	195.86	1.79
2044												2044	199.288	1.82
2045												2045	202.776	1.85
2046												2046	206.325	1.88
2047												2047	209.936	1.92
2048												2048	213.61	1.95
2049												2049	217.348	1.98
2050												2050	221.152	2.02
2051												2051	225.022	2.05
2052												2052	228.96	2.09
2053												2053	232.967	2.13
2054												2054	237.044	2.16
2055												2055	241.192	2.20
2056												2056	245.413	2.24
2057												2057	249.708	2.28
2058												2058	254.078	2.32
2059												2059	258.524	2.36
2060												2060	263.048	2.40
							Total Present Value of Discounted Costs (Sum of Column (i))							
Project Life							**Transfer to Table 20, Column (c), Exhibit F: Proposal Costs and Benefit Summaries**		**$ 1,922,824**					

Comments: Irrigation system currently exists and incurs operational and maintenance costs. Completion of the proposed project will not result in an increase in O&M costs except for periodic inspection and maintenance of the pumps at Penmar Recreation Center and at Marine Park. Costs above reflect incremental costs. Based on City maintenance staff experience, annual maintenance costs are fairly low, however on the 3rd year of use, pumps typically require replacement or major repairs.

Table 7.F.2 - Annual Water Supply Benefits (2009 dollars)

Project: 16th Street Watershed Runoff Use Project

	(b) Type of Benefit: Avoided Imported Water Purchase (C) Measure of Benefit [Unit]: HCF					(b) Type of Benefit: (C) Measure of Benefit [Unit]:					(b) Type of Benefit: (C) Measure of Benefit [Unit]:					Discounting Calculations for Economic Benefits		
(a) Year	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(h) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009		0	0	$2.87	$0			0		$0			0		$0	**$0**	**1.000**	**$0**
2010		0	0	$3.19	$0			0		$0			0		$0	**$0**	**0.943**	**$0**
2011		0	0	$3.36	$0			0		$0			0		$0	**$0**	**0.890**	**$0**
2012		0	0	$3.52	$0			0		$0			0		$0	**$0**	**0.840**	**$0**
2013	-1523	0	1523	$3.67	$5,591			0		$0			0		$0	**$5,591**	**0.792**	**$4,428**
2014	-1523	0	1523	$3.82	$5,823			0		$0			0		$0	**$5,823**	**0.747**	**$4,350**
2015	-1523	0	1523	$3.96	$6,035			0		$0			0		$0	**$6,035**	**0.705**	**$4,255**
2016	-1523	0	1523	$4.11	$6,253			0		$0			0		$0	**$6,253**	**0.665**	**$4,158**
2017	-1523	0	1523	$4.25	$6,479			0		$0			0		$0	**$6,479**	**0.627**	**$4,062**
2018	-1523	0	1523	$4.41	$6,712			0		$0			0		$0	**$6,712**	**0.592**	**$3,973**
2019	-1523	0	1523	$4.57	$6,958			0		$0			0		$0	**$6,958**	**0.558**	**$3,883**
2020	-1523	0	1523	$4.74	$7,212			0		$0			0		$0	**$7,212**	**0.527**	**$3,801**
2021	-1523	0	1523	$4.78	$7,276			0		$0			0		$0	**$7,276**	**0.497**	**$3,616**
2022	-1523	0	1523	$4.83	$7,353			0		$0			0		$0	**$7,353**	**0.469**	**$3,449**
2023	-1523	0	1523	$4.87	$7,424			0		$0			0		$0	**$7,424**	**0.442**	**$3,281**
2024	-1523	0	1523	$4.92	$7,494			0		$0			0		$0	**$7,494**	**0.417**	**$3,125**
2025	-1523	0	1523	$4.97	$7,565			0		$0			0		$0	**$7,565**	**0.390**	**$2,950**
2026	-1523	0	1523	$5.02	$7,642			0		$0			0		$0	**$7,642**	**0.371**	**$2,835**
2027	-1523	0	1523	$5.07	$7,720			0		$0			0		$0	**$7,720**	**0.350**	**$2,702**
2028	-1523	0	1523	$5.12	$7,790			0		$0			0		$0	**$7,790**	**0.331**	**$2,579**
2029	-1523	0	1523	$5.17	$7,868			0		$0			0		$0	**$7,868**	**0.312**	**$2,455**
2030	-1523	0	1523	$5.22	$7,945			0		$0			0		$0	**$7,945**	**0.294**	**$2,336**
2031	-1523	0	1523	$5.27	$8,023			0		$0			0		$0	**$8,023**	**0.278**	**$2,230**
2032	-1523	0	1523	$5.32	$8,100			0		$0			0		$0	**$8,100**	**0.262**	**$2,122**
2033	-1523	0	1523	$5.37	$8,185			0		$0			0		$0	**$8,185**	**0.247**	**$2,022**
2034			0		$0			0		$0			0		$0	**$0**	**0.233**	**$0**
2035			0		$0			0		$0			0		$0	**$0**	**0.220**	**$0**
2036			0		$0			0		$0			0		$0	**$0**	**0.207**	**$0**
2037			0		$0			0		$0			0		$0	**$0**	**0.196**	**$0**
2038			0		$0			0		$0			0		$0	**$0**	**0.185**	**$0**
2039			0		$0			0		$0			0		$0	**$0**	**0.174**	**$0**
2040			0		$0			0		$0			0		$0	**$0**	**0.164**	**$0**
2041			0		$0			0		$0			0		$0	**$0**	**0.155**	**$0**
2042			0		$0			0		$0			0		$0	**$0**	**0.146**	**$0**
2043			0		$0			0		$0			0		$0	**$0**	**0.138**	**$0**
2044			0		$0			0		$0			0		$0	**$0**	**0.130**	**$0**
2045			0		$0			0		$0			0		$0	**$0**	**0.123**	**$0**
2046			0		$0			0		$0			0		$0	**$0**	**0.116**	**$0**
2047			0		$0			0		$0			0		$0	**$0**	**0.109**	**$0**
2048			0		$0			0		$0			0		$0	**$0**	**0.103**	**$0**
2049			0		$0			0		$0			0		$0	**$0**	**0.097**	**$0**
2050			0		$0			0		$0			0		$0	**$0**	**0.092**	**$0**
2051			0		$0			0		$0			0		$0	**$0**	**0.087**	**$0**
2052			0		$0			0		$0			0		$0	**$0**	**0.082**	**$0**
2053			0		$0			0		$0			0		$0	**$0**	**0.077**	**$0**
2054			0		$0			0		$0			0		$0	**$0**	**0.073**	**$0**
2055			0		$0			0		$0			0		$0	**$0**	**0.069**	**$0**
2056			0		$0			0		$0			0		$0	**$0**	**0.065**	**$0**
2057			0		$0			0		$0			0		$0	**$0**	**0.061**	**$0**
2058			0		$0			0		$0			0		$0	**$0**	**0.058**	**$0**
2059			0		$0			0		$0			0		$0	**$0**	**0.054**	**$0**
2060			0		$0			0		$0			0		$0	**$0**	**0.051**	**$0**

Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):	$68,612
Project Allocation:	100.0%
Total Present Value of Discounted Benefits (Monetized Benefits):	**$68,612**

	Narrative description of benefits: potable water supply is preserved for use other than irrigation	Narrative description of benefits:	Narrative description of benefits:		

Comments: *Assume 15 year lifespan of the project. Water quantity estimate based on City of LA treating rain water only, not dry weather flows. If City of LA decides to treat dry weather flows, water quantity benefit may increase.*

Table 7.F.3 - Annual Costs of Avoided Projects (2009 dollars)

Project: 16th Street Watershed Runoff Use Project

	Alternative (Avoided Project Name): Avoided Project Description:				Alternative (Avoided Project Name): Avoided Project Description:				Alternative (Avoided Project Name): Avoided Project Description:				Discounting Calculations for Economic Benefits		
(a) Year	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(e) Total Avoided Costs for All Alts ($)	(f) Discount Value	(g) Discounted Benefits [e x f]
2009				$0				$0				$0	**$0**	**1.000**	**$0**
2010				$0				$0				$0	**$0**	**0.943**	**$0**
2011				$0				$0				$0	**$0**	**0.890**	**$0**
2012				$0				$0				$0	**$0**	**0.840**	**$0**
2013				$0				$0				$0	**$0**	**0.792**	**$0**
2014				$0				$0				$0	**$0**	**0.747**	**$0**
2015				$0				$0				$0	**$0**	**0.705**	**$0**
2016				$0				$0				$0	**$0**	**0.665**	**$0**
2017				$0				$0				$0	**$0**	**0.627**	**$0**
2018				$0				$0				$0	**$0**	**0.592**	**$0**
2019				$0				$0				$0	**$0**	**0.558**	**$0**
2020				$0				$0				$0	**$0**	**0.527**	**$0**
2021				$0				$0				$0	**$0**	**0.497**	**$0**
2022				$0				$0				$0	**$0**	**0.469**	**$0**
2023				$0				$0				$0	**$0**	**0.442**	**$0**
2024				$0				$0				$0	**$0**	**0.417**	**$0**
2025				$0				$0				$0	**$0**	**0.390**	**$0**
2026				$0				$0				$0	**$0**	**0.371**	**$0**
2027				$0				$0				$0	**$0**	**0.350**	**$0**
2028				$0				$0				$0	**$0**	**0.331**	**$0**
2029				$0				$0				$0	**$0**	**0.312**	**$0**
2030				$0				$0				$0	**$0**	**0.294**	**$0**
2031				$0				$0				$0	**$0**	**0.278**	**$0**
2032				$0				$0				$0	**$0**	**0.262**	**$0**
2033				$0				$0				$0	**$0**	**0.247**	**$0**
2034				$0				$0				$0	**$0**	**0.233**	**$0**
2035				$0				$0				$0	**$0**	**0.220**	**$0**
2036				$0				$0				$0	**$0**	**0.207**	**$0**
2037				$0				$0				$0	**$0**	**0.196**	**$0**
2038				$0				$0				$0	**$0**	**0.185**	**$0**
2039				$0				$0				$0	**$0**	**0.174**	**$0**
2040				$0				$0				$0	**$0**	**0.164**	**$0**
2041				$0				$0				$0	**$0**	**0.155**	**$0**
2042				$0				$0				$0	**$0**	**0.146**	**$0**
2043				$0				$0				$0	**$0**	**0.138**	**$0**
2044				$0				$0				$0	**$0**	**0.130**	**$0**
2045				$0				$0				$0	**$0**	**0.123**	**$0**
2046				$0				$0				$0	**$0**	**0.116**	**$0**
2047				$0				$0				$0	**$0**	**0.109**	**$0**
2048				$0				$0				$0	**$0**	**0.103**	**$0**
2049				$0				$0				$0	**$0**	**0.097**	**$0**
2050				$0				$0				$0	**$0**	**0.092**	**$0**
2051				$0				$0				$0	**$0**	**0.087**	**$0**
2052				$0				$0				$0	**$0**	**0.082**	**$0**
2053				$0				$0				$0	**$0**	**0.077**	**$0**
2054				$0				$0				$0	**$0**	**0.073**	**$0**
2055				$0				$0				$0	**$0**	**0.069**	**$0**
2056				$0				$0				$0	**$0**	**0.065**	**$0**
2057				$0				$0				$0	**$0**	**0.061**	**$0**
2058				$0				$0				$0	**$0**	**0.058**	**$0**
2059				$0				$0				$0	**$0**	**0.054**	**$0**
2060				$0				$0				$0	**$0**	**0.051**	**$0**
													Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
													Project Allocation:		100.0%
													Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Table 7.F.4 - Annual Other Water Supply Benefits (2009 dollars)

Project: 16th Street Watershed Runoff Use Project --City of Santa Monica

(a) Year	(b) Type of Benefit: (C) Description of Benefit: (d) Annual Benefit ($)	(b) Type of Benefit: (C) Description of Benefit: (d) Annual Benefit ($)	(b) Type of Benefit: (C) Description of Benefit: (d) Annual Benefit ($)	Discounting Calculations for Economic Benefits: (d) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009	$0	$0	$0	**$0**	**1.000**	**$0**
2010	$0	$0	$0	**$0**	**0.943**	**$0**
2011	$0	$0	$0	**$0**	**0.890**	**$0**
2012	$0	$0	$0	**$0**	**0.840**	**$0**
2013	$0	$0	$0	**$0**	**0.792**	**$0**
2014	$0	$0	$0	**$0**	**0.747**	**$0**
2015	$0	$0	$0	**$0**	**0.705**	**$0**
2016	$0	$0	$0	**$0**	**0.665**	**$0**
2017	$0	$0	$0	**$0**	**0.627**	**$0**
2018	$0	$0	$0	**$0**	**0.592**	**$0**
2019	$0	$0	$0	**$0**	**0.558**	**$0**
2020	$0	$0	$0	**$0**	**0.527**	**$0**
2021	$0	$0	$0	**$0**	**0.497**	**$0**
2022	$0	$0	$0	**$0**	**0.469**	**$0**
2023	$0	$0	$0	**$0**	**0.442**	**$0**
2024	$0	$0	$0	**$0**	**0.417**	**$0**
2025	$0	$0	$0	**$0**	**0.390**	**$0**
2026	$0	$0	$0	**$0**	**0.371**	**$0**
2027	$0	$0	$0	**$0**	**0.350**	**$0**
2028	$0	$0	$0	**$0**	**0.331**	**$0**
2029	$0	$0	$0	**$0**	**0.312**	**$0**
2030	$0	$0	$0	**$0**	**0.294**	**$0**
2031	$0	$0	$0	**$0**	**0.278**	**$0**
2032	$0	$0	$0	**$0**	**0.262**	**$0**
2033	$0	$0	$0	**$0**	**0.247**	**$0**
2034	$0	$0	$0	**$0**	**0.233**	**$0**
2035	$0	$0	$0	**$0**	**0.220**	**$0**
2036	$0	$0	$0	**$0**	**0.207**	**$0**
2037	$0	$0	$0	**$0**	**0.196**	**$0**
2038	$0	$0	$0	**$0**	**0.185**	**$0**
2039	$0	$0	$0	**$0**	**0.174**	**$0**
2040	$0	$0	$0	**$0**	**0.164**	**$0**
2041	$0	$0	$0	**$0**	**0.155**	**$0**
2042	$0	$0	$0	**$0**	**0.146**	**$0**
2043	$0	$0	$0	**$0**	**0.138**	**$0**
2044	$0	$0	$0	**$0**	**0.130**	**$0**
2045	$0	$0	$0	**$0**	**0.123**	**$0**
2046	$0	$0	$0	**$0**	**0.116**	**$0**
2047	$0	$0	$0	**$0**	**0.109**	**$0**
2048	$0	$0	$0	**$0**	**0.103**	**$0**
2049	$0	$0	$0	**$0**	**0.097**	**$0**
2050	$0	$0	$0	**$0**	**0.092**	**$0**
2051	$0	$0	$0	**$0**	**0.087**	**$0**
2052	$0	$0	$0	**$0**	**0.082**	**$0**
2053	$0	$0	$0	**$0**	**0.077**	**$0**
2054	$0	$0	$0	**$0**	**0.073**	**$0**
2055	$0	$0	$0	**$0**	**0.069**	**$0**
2056	$0	$0	$0	**$0**	**0.065**	**$0**
2057	$0	$0	$0	**$0**	**0.061**	**$0**
2058	$0	$0	$0	**$0**	**0.058**	**$0**
2059	$0	$0	$0	**$0**	**0.054**	**$0**
2060	$0	$0	$0	**$0**	**0.051**	**$0**
			Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):			$0
			Project Allocation:			100.0%
			Total Present Value of Discounted Benefits (Monetized Benefits):			**$0**

Table 7.F.5 - Total Water Supply Benefits (2009 dollars)			
Project: 16th Street Watershed Runoff Use Project			
(a) Total Discounted Water Supply Benefits	**(b) Total Discounted Avoided Project Costs**	**(c) Other Discounted Water Supply Benefits**	**(d) Total Value of Discounted Benefits [a + c] or [b + c]**
$68,612	$0	$0	**$68,612**
Comments:			

APPENDIX G

Surface Water Treatment Plant Improvements – Covina Irrigating Company

Table 7.G.1 - Annual Cost of Project
(All costs should be in 2009 dollars)
Project: Surface Water Treatment Plant Improvements

	Initial Costs	Operations and Maintenance Costs						Discounting Calculations		Original values (in constant 2009 dollars)				
Year	(a) Grand Total Cost from Table 7 (row (i), column (d))	(b) Admin	(c) Operation	(d) Maintenance	(e) Replacement	(f) Other	(g) Total Costs (a)+…+(f)	(h) Discount Factor	(i) Discounted Costs (g) x (h)	(b) Admin	(c) Operation	(d) Maintenance	(e) Replacement	(f) Other
2009							$0	1.00	$0					
2010							$0	0.94	$0					
2011	$229,414	$47,805	$127,595	$141,033	$16,320	$0	$562,167	0.89	$500,327	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2012	$6,200,321	$47,805	$127,595	$141,033	$16,320	$0	$6,533,074	0.84	$5,485,295	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2013	$382,048	$47,805	$127,595	$141,033	$16,320	$0	$714,801	0.79	$566,190	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2014		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.75	$248,652	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2015		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.70	$234,578	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2016		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.67	$221,300	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2017		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.63	$208,773	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2018		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.59	$196,956	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2019		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.56	$185,808	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2020		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.53	$175,290	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2021		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.50	$165,368	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2022		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.47	$156,008	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2023		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.44	$147,177	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2024		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.42	$138,846	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2025		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.39	$130,987	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2026		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.37	$123,573	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2027		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.35	$116,578	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2028		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.33	$109,979	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2029		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.31	$103,754	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2030		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.29	$97,881	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2031		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.28	$92,341	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2032		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.26	$87,114	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2033		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.25	$82,183	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2034		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.23	$77,531	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2035		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.22	$73,142	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2036		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.21	$69,002	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2037		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.20	$65,097	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2038		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.18	$61,412	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2039		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.17	$57,936	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2040		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.16	$54,656	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2041		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.15	$51,563	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2042		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.15	$48,644	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2043		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.14	$45,890	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2044		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.13	$43,293	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2045		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.12	$40,842	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2046		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.12	$38,531	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2047		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.11	$36,350	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2048		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.10	$34,292	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2049		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.10	$32,351	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2050		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.09	$30,520	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2051		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.09	$28,792	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2052		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.08	$27,163	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2053		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.08	$25,625	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2054		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.07	$24,175	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2055		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.07	$22,806	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2056		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.06	$21,515	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2057		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.06	$20,297	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2058		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.06	$19,148	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2059		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.05	$18,065	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
2060		$47,805	$127,595	$141,033	$16,320	$0	$332,753	0.05	$17,042	$ 47,805.00	$ 127,595.00	$ 141,033.00	$ 16,320.00	$ -
Project Life								**Total Present Value of Discounted Costs (Sum of Column (i))**						
								Transfer to Table 20, Column (c), Exhibit F: Proposal Costs and Benefit Summaries	**$10,660,636**					

Comments: *Values taken from Malcom-Pirnie's Preliminary Design Report -June 2008 (uploaded to FTP site) and elevated by 2% to approximate 2009 dollars.*

Table 7.G.2 - Annual Water Supply Benefits (2009 dollars)

Project: Surface Water Treatment Plant Improvements

	(b) Type of Benefit: Water Supply, Avoided Imports (C) Measure of Benefit [Unit]: AF/year					(b) Type of Benefit: (C) Measure of Benefit [Unit]:					(b) Type of Benefit: (C) Measure of Benefit [Unit]:					Discounting Calculations for Economic Benefits		
(a) Year	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(h) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009								0		$0			0		$0	**$0**	**1.000**	**$0**
2010								0		$0			0		$0	**$0**	**0.943**	**$0**
2011								0		$0			0		$0	**$0**	**0.890**	**$0**
2012	-7,500	0	7,500	$760	$5,700,000			0		$0			0		$0	**$5,700,000**	**0.840**	**$4,788,000**
2013	-12,000	0	12,000	$793	$9,516,000			0		$0			0		$0	**$9,516,000**	**0.792**	**$7,536,672**
2014	-12,000	0	12,000	$826	$9,912,000			0		$0			0		$0	**$9,912,000**	**0.747**	**$7,404,264**
2015	-12,000	0	12,000	$856	$10,272,000			0		$0			0		$0	**$10,272,000**	**0.705**	**$7,241,760**
2016	-12,000	0	12,000	$887	$10,644,000			0		$0			0		$0	**$10,644,000**	**0.665**	**$7,078,260**
2017	-12,000	0	12,000	$919	$11,028,000			0		$0			0		$0	**$11,028,000**	**0.627**	**$6,914,556**
2018	-12,000	0	12,000	$952	$11,424,000			0		$0			0		$0	**$11,424,000**	**0.592**	**$6,763,008**
2019	-12,000	0	12,000	$987	$11,844,000			0		$0			0		$0	**$11,844,000**	**0.558**	**$6,608,952**
2020	-12,000	0	12,000	$1,023	$12,276,000			0		$0			0		$0	**$12,276,000**	**0.527**	**$6,469,452**
2021	-12,000	0	12,000	$1,032	$12,384,000			0		$0			0		$0	**$12,384,000**	**0.497**	**$6,154,848**
2022	-12,000	0	12,000	$1,043	$12,516,000			0		$0			0		$0	**$12,516,000**	**0.469**	**$5,870,004**
2023	-12,000	0	12,000	$1,053	$12,636,000			0		$0			0		$0	**$12,636,000**	**0.442**	**$5,585,112**
2024	-12,000	0	12,000	$1,063	$12,756,000			0		$0			0		$0	**$12,756,000**	**0.417**	**$5,319,252**
2025	-12,000	0	12,000	$1,073	$12,876,000			0		$0			0		$0	**$12,876,000**	**0.390**	**$5,021,640**
2026	-12,000	0	12,000	$1,084	$13,008,000			0		$0			0		$0	**$13,008,000**	**0.371**	**$4,825,968**
2027	-12,000	0	12,000	$1,095	$13,140,000			0		$0			0		$0	**$13,140,000**	**0.350**	**$4,599,000**
2028	-12,000	0	12,000	$1,105	$13,260,000			0		$0			0		$0	**$13,260,000**	**0.331**	**$4,389,060**
2029	-12,000	0	12,000	$1,116	$13,392,000			0		$0			0		$0	**$13,392,000**	**0.312**	**$4,178,304**
2030	-12,000	0	12,000	$1,127	$13,524,000			0		$0			0		$0	**$13,524,000**	**0.294**	**$3,976,056**
2031	-12,000	0	12,000	$1,138	$13,656,000			0		$0			0		$0	**$13,656,000**	**0.278**	**$3,796,368**
2032	-12,000	0	12,000	$1,149	$13,788,000			0		$0			0		$0	**$13,788,000**	**0.262**	**$3,612,456**
2033	-12,000	0	12,000	$1,161	$13,932,000			0		$0			0		$0	**$13,932,000**	**0.247**	**$3,441,204**
2034	-12,000	0	12,000	$1,172	$14,064,000			0		$0			0		$0	**$14,064,000**	**0.233**	**$3,276,912**
2035	-12,000	0	12,000	$1,184	$14,208,000			0		$0			0		$0	**$14,208,000**	**0.220**	**$3,125,760**
2036	-12,000	0	12,000	$1,195	$14,340,000			0		$0			0		$0	**$14,340,000**	**0.207**	**$2,968,380**
2037	-12,000	0	12,000	$1,207	$14,484,000			0		$0			0		$0	**$14,484,000**	**0.196**	**$2,838,864**
2038	-12,000	0	12,000	$1,219	$14,628,000			0		$0			0		$0	**$14,628,000**	**0.185**	**$2,706,180**
2039	-12,000	0	12,000	$1,231	$14,772,000			0		$0			0		$0	**$14,772,000**	**0.174**	**$2,570,328**
2040	-12,000	0	12,000	$1,243	$14,916,000			0		$0			0		$0	**$14,916,000**	**0.164**	**$2,446,224**
2041	-12,000	0	12,000	$1,255	$15,060,000			0		$0			0		$0	**$15,060,000**	**0.155**	**$2,334,300**
2042	-12,000	0	12,000	$1,267	$15,204,000			0		$0			0		$0	**$15,204,000**	**0.146**	**$2,219,784**
2043	-12,000	0	12,000	$1,280	$15,360,000			0		$0			0		$0	**$15,360,000**	**0.138**	**$2,119,680**
2044	-12,000	0	12,000	$1,292	$15,504,000			0		$0			0		$0	**$15,504,000**	**0.130**	**$2,015,520**
2045	-12,000	0	12,000	$1,305	$15,660,000			0		$0			0		$0	**$15,660,000**	**0.123**	**$1,926,180**
2046	-12,000	0	12,000	$1,318	$15,816,000			0		$0			0		$0	**$15,816,000**	**0.116**	**$1,834,656**
2047	-12,000	0	12,000	$1,330	$15,960,000			0		$0			0		$0	**$15,960,000**	**0.109**	**$1,739,640**
2048	-12,000	0	12,000	$1,344	$16,128,000			0		$0			0		$0	**$16,128,000**	**0.103**	**$1,661,184**
2049	-12,000	0	12,000	$1,357	$16,284,000			0		$0			0		$0	**$16,284,000**	**0.097**	**$1,579,548**
2050	-12,000	0	12,000	$1,370	$16,440,000			0		$0			0		$0	**$16,440,000**	**0.092**	**$1,512,480**
2051	-12,000	0	12,000	$1,383	$16,596,000			0		$0			0		$0	**$16,596,000**	**0.087**	**$1,443,852**
2052	-12,000	0	12,000	$1,397	$16,764,000			0		$0			0		$0	**$16,764,000**	**0.082**	**$1,374,648**
2053	-12,000	0	12,000	$1,411	$16,932,000			0		$0			0		$0	**$16,932,000**	**0.077**	**$1,303,764**
2054	-12,000	0	12,000	$1,424	$17,088,000			0		$0			0		$0	**$17,088,000**	**0.073**	**$1,247,424**
2055	-12,000	0	12,000	$1,439	$17,268,000			0		$0			0		$0	**$17,268,000**	**0.069**	**$1,191,492**
2056	-12,000	0	12,000	$1,452	$17,424,000			0		$0			0		$0	**$17,424,000**	**0.065**	**$1,132,560**
2057	-12,000	0	12,000	$1,467	$17,604,000			0		$0			0		$0	**$17,604,000**	**0.061**	**$1,073,844**
2058	-12,000	0	12,000	$1,481	$17,772,000			0		$0			0		$0	**$17,772,000**	**0.058**	**$1,030,776**
2059	-12,000	0	12,000	$1,496	$17,952,000			0		$0			0		$0	**$17,952,000**	**0.054**	**$974,585**
2060	-12,000	0	12,000	$1,510	$18,120,000			0		$0			0		$0	**$18,120,000**	**0.051**	**$928,024**

Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):	$172,150,784
Project Allocation:	100.0%
Total Present Value of Discounted Benefits (Monetized Benefits):	**$172,150,784**

Narrative description of benefits: USE TIER 1 TREATED RATE = VALUE OF RESOURCE	Narrative description of benefits:	Narrative description of benefits:	

Comments: USE TIER 1 TREATED RATE = VALUE OF RESOURCE

Table 7.G.3 - Annual Costs of Avoided Projects (2009 dollars)

Project: urface Water Treatment Plant Improvements

	Alternative (Avoided Project Name): *Avoided Project Description:*				*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Discounting Calculations for Economic Benefits*		
(a) Year	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(e) Total Avoided Costs for All Alts ($)	(f) Discount Value	(g) Discounted Benefits [e x f]
2009				$0				$0				$0	**$0**	**1.000**	**$0**
2010				$0				$0				$0	**$0**	**0.943**	**$0**
2011				$0				$0				$0	**$0**	**0.890**	**$0**
2012				$0				$0				$0	**$0**	**0.840**	**$0**
2013				$0				$0				$0	**$0**	**0.792**	**$0**
2014				$0				$0				$0	**$0**	**0.747**	**$0**
2015				$0				$0				$0	**$0**	**0.705**	**$0**
2016				$0				$0				$0	**$0**	**0.665**	**$0**
2017				$0				$0				$0	**$0**	**0.627**	**$0**
2018				$0				$0				$0	**$0**	**0.592**	**$0**
2019				$0				$0				$0	**$0**	**0.558**	**$0**
2020				$0				$0				$0	**$0**	**0.527**	**$0**
2021				$0				$0				$0	**$0**	**0.497**	**$0**
2022				$0				$0				$0	**$0**	**0.469**	**$0**
2023				$0				$0				$0	**$0**	**0.442**	**$0**
2024				$0				$0				$0	**$0**	**0.417**	**$0**
2025				$0				$0				$0	**$0**	**0.390**	**$0**
2026				$0				$0				$0	**$0**	**0.371**	**$0**
2027				$0				$0				$0	**$0**	**0.350**	**$0**
2028				$0				$0				$0	**$0**	**0.331**	**$0**
2029				$0				$0				$0	**$0**	**0.312**	**$0**
2030				$0				$0				$0	**$0**	**0.294**	**$0**
2031				$0				$0				$0	**$0**	**0.278**	**$0**
2032				$0				$0				$0	**$0**	**0.262**	**$0**
2033				$0				$0				$0	**$0**	**0.247**	**$0**
2034				$0				$0				$0	**$0**	**0.233**	**$0**
2035				$0				$0				$0	**$0**	**0.220**	**$0**
2036				$0				$0				$0	**$0**	**0.207**	**$0**
2037				$0				$0				$0	**$0**	**0.196**	**$0**
2038				$0				$0				$0	**$0**	**0.185**	**$0**
2039				$0				$0				$0	**$0**	**0.174**	**$0**
2040				$0				$0				$0	**$0**	**0.164**	**$0**
2041				$0				$0				$0	**$0**	**0.155**	**$0**
2042				$0				$0				$0	**$0**	**0.146**	**$0**
2043				$0				$0				$0	**$0**	**0.138**	**$0**
2044				$0				$0				$0	**$0**	**0.130**	**$0**
2045				$0				$0				$0	**$0**	**0.123**	**$0**
2046				$0				$0				$0	**$0**	**0.116**	**$0**
2047				$0				$0				$0	**$0**	**0.109**	**$0**
2048				$0				$0				$0	**$0**	**0.103**	**$0**
2049				$0				$0				$0	**$0**	**0.097**	**$0**
2050				$0				$0				$0	**$0**	**0.092**	**$0**
2051				$0				$0				$0	**$0**	**0.087**	**$0**
2052				$0				$0				$0	**$0**	**0.082**	**$0**
2053				$0				$0				$0	**$0**	**0.077**	**$0**
2054				$0				$0				$0	**$0**	**0.073**	**$0**
2055				$0				$0				$0	**$0**	**0.069**	**$0**
2056				$0				$0				$0	**$0**	**0.065**	**$0**
2057				$0				$0				$0	**$0**	**0.061**	**$0**
2058				$0				$0				$0	**$0**	**0.058**	**$0**
2059				$0				$0				$0	**$0**	**0.054**	**$0**
2060				$0				$0				$0	**$0**	**0.051**	**$0**
													Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
													Project Allocation:		100.0%
													Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Table 7.G.4 - Annual Other Water Supply Benefits (2009 dollars)

Project: Surface Water Treatment Plant Improvements

(a) Year	(b) Type of Benefit: (C) Description of Benefit: (d) Annual Benefit ($)	(b) Type of Benefit: (C) Description of Benefit: (d) Annual Benefit ($)	(b) Type of Benefit: (C) Description of Benefit: (d) Annual Benefit ($)	Discounting Calculations for Economic Benefits (d) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009	$0	$0	$0	**$0**	**1.000**	**$0**
2010	$0	$0	$0	**$0**	**0.943**	**$0**
2011	$0	$0	$0	**$0**	**0.890**	**$0**
2012	$0	$0	$0	**$0**	**0.840**	**$0**
2013	$0	$0	$0	**$0**	**0.792**	**$0**
2014	$0	$0	$0	**$0**	**0.747**	**$0**
2015	$0	$0	$0	**$0**	**0.705**	**$0**
2016	$0	$0	$0	**$0**	**0.665**	**$0**
2017	$0	$0	$0	**$0**	**0.627**	**$0**
2018	$0	$0	$0	**$0**	**0.592**	**$0**
2019	$0	$0	$0	**$0**	**0.558**	**$0**
2020	$0	$0	$0	**$0**	**0.527**	**$0**
2021	$0	$0	$0	**$0**	**0.497**	**$0**
2022	$0	$0	$0	**$0**	**0.469**	**$0**
2023	$0	$0	$0	**$0**	**0.442**	**$0**
2024	$0	$0	$0	**$0**	**0.417**	**$0**
2025	$0	$0	$0	**$0**	**0.390**	**$0**
2026	$0	$0	$0	**$0**	**0.371**	**$0**
2027	$0	$0	$0	**$0**	**0.350**	**$0**
2028	$0	$0	$0	**$0**	**0.331**	**$0**
2029	$0	$0	$0	**$0**	**0.312**	**$0**
2030	$0	$0	$0	**$0**	**0.294**	**$0**
2031	$0	$0	$0	**$0**	**0.278**	**$0**
2032	$0	$0	$0	**$0**	**0.262**	**$0**
2033	$0	$0	$0	**$0**	**0.247**	**$0**
2034	$0	$0	$0	**$0**	**0.233**	**$0**
2035	$0	$0	$0	**$0**	**0.220**	**$0**
2036	$0	$0	$0	**$0**	**0.207**	**$0**
2037	$0	$0	$0	**$0**	**0.196**	**$0**
2038	$0	$0	$0	**$0**	**0.185**	**$0**
2039	$0	$0	$0	**$0**	**0.174**	**$0**
2040	$0	$0	$0	**$0**	**0.164**	**$0**
2041	$0	$0	$0	**$0**	**0.155**	**$0**
2042	$0	$0	$0	**$0**	**0.146**	**$0**
2043	$0	$0	$0	**$0**	**0.138**	**$0**
2044	$0	$0	$0	**$0**	**0.130**	**$0**
2045	$0	$0	$0	**$0**	**0.123**	**$0**
2046	$0	$0	$0	**$0**	**0.116**	**$0**
2047	$0	$0	$0	**$0**	**0.109**	**$0**
2048	$0	$0	$0	**$0**	**0.103**	**$0**
2049	$0	$0	$0	**$0**	**0.097**	**$0**
2050	$0	$0	$0	**$0**	**0.092**	**$0**
2051	$0	$0	$0	**$0**	**0.087**	**$0**
2052	$0	$0	$0	**$0**	**0.082**	**$0**
2053	$0	$0	$0	**$0**	**0.077**	**$0**
2054	$0	$0	$0	**$0**	**0.073**	**$0**
2055	$0	$0	$0	**$0**	**0.069**	**$0**
2056	$0	$0	$0	**$0**	**0.065**	**$0**
2057	$0	$0	$0	**$0**	**0.061**	**$0**
2058	$0	$0	$0	**$0**	**0.058**	**$0**
2059	$0	$0	$0	**$0**	**0.054**	**$0**
2060	$0	$0	$0	**$0**	**0.051**	**$0**
				Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
				Project Allocation:		100.0%
				Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Table 7.G.5 - Total Water Supply Benefits (2009 dollars)			
Project: Surface Water Treatment Plant Improvements			
(a) Total Discounted Water Supply Benefits	**(b) Total Discounted Avoided Project Costs**	**(c) Other Discounted Water Supply Benefits**	**(d) Total Value of Discounted Benefits [a + c] or [b + c]**
$172,150,784	$0	$0	**$172,150,784**
Comments:			

APPENDIX H

Central Los Angeles County Regional Water Recycling Program – Los Angeles Department of Water and Power

Table 7.H.1 - Annual Cost of Project
(All costs should be in 2009 dollars)
Project: Central Los Angeles County (CeLAC) Regional Water Recycling Program

	Initial Costs	Operations and Maintenance Costs						Discounting Calculations	
Year	(a) Grand Total Cost from Table 7 (row (i), column (d))	(b) Admin	(c) Operation	(d) Maintenance	(e) Replacement	(f) Other	(g) Total Costs (a)+…+(f)	(h) Discount Factor	(i) Discounted Costs (g) x (h)
2009	$ 88,211	$ -	$ -	$ -	$ -	$ -	$ 88,211	1.000	$ 88,211.20
2010	$ 444,422	$ -	$ -	$ -	$ -	$ -	$ 444,422	0.943	$ 419,266.23
2011	$ 3,195,976	$ -	$ -	$ -	$ -	$ -	$ 3,195,976	0.890	$ 2,844,407.44
2012	$ 3,280,396	$ -	$ -	$ -	$ -	$ -	$ 3,280,396	0.840	$ 2,754,283.91
2013	$ 3,280,241	$ -	$ -	$ -	$ -	$ -	$ 3,280,241	0.792	$ 2,598,258.11
2014	$ -	$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.747	$ 143,324.12
2015		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.705	$ 135,211.43
2016		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.665	$ 127,557.95
2017		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.627	$ 120,337.69
2018		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.592	$ 113,526.13
2019		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.558	$ 107,100.12
2020		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.527	$ 101,037.85
2021		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.497	$ 95,318.72
2022		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.469	$ 89,923.32
2023		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.442	$ 84,833.32
2024		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.417	$ 80,031.44
2025		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.394	$ 75,501.36
2026		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.371	$ 71,227.70
2027		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.350	$ 67,195.94
2028		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.331	$ 63,392.40
2029		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.312	$ 59,804.15
2030		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.294	$ 56,419.01
2031		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.278	$ 53,225.48
2032		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.262	$ 50,212.71
2033		$ 152,000.00	$ 999,800.00	$ -	$ -	$ -	$ 1,151,800	0.247	$ 284,469.89
2034		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.233	$ 44,689.14
2035		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.220	$ 42,159.56
2036		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.207	$ 39,773.17
2037		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.196	$ 37,521.86
2038		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.185	$ 35,397.98
2039		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.174	$ 33,394.32
2040		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.164	$ 31,504.08
2041		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.155	$ 29,720.83
2042		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.146	$ 28,038.52
2043		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.138	$ 26,451.43
2044		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.130	$ 24,954.18
2045		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.123	$ 23,541.68
2046		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.116	$ 22,209.13
2047		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.109	$ 20,952.01
2048		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.103	$ 19,766.05
2049		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.097	$ 18,647.22
2050		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.092	$ 17,591.71
2051		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.087	$ 16,595.96
2052		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.082	$ 15,656.56
2053		$ 152,000.00	$ 999,800.00	$ -	$ -	$ -	$ 1,151,800	0.077	$ 88,699.06
2054		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.073	$ 13,934.28
2055		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.069	$ 13,145.55
2056		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.065	$ 12,401.46
2057		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.061	$ 11,699.49
2058		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.058	$ 11,037.26
2059		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.054	$ 10,412.51
2060		$ 152,000.00	$ 39,800.00	$ -	$ -	$ -	$ 191,800	0.051	$ 9,823.12
Project Life								Total Present Value of Discounted Costs (Sum of Column (i)) Transfer to Table 20, Column (c), Exhibit F: Proposal Costs and Benefit Summaries	**$ 11,383,795.74**

Comments: We requested O&M costs from LADWP Water Operation's staff for similar Pump Station and Tank, and they provided the following info: PS=$175k/yr O&M with O=80% and M=20% Tank=$60k/yr O&M with O=20% yearly and M=80% every 20 years ($60k*0.20*20) on year 20 and 40. Pipeline=$4,800/yr M ($0.60/LF). The admin costs are rolled into the O&M costs. Based on this data, annual operation costs total $152,000, while annual maintenance costs total $39,800, except for the 20th and 40th years of the project when maintenance costs total $999,800. Annual O&M costs were converted to nominal dollars using the GDP Implicit Price Deflator. Initial costs were allocted annually based on the project desription contained in Attachment 3 and supporting materials contained in"LADWP CeLAC Budget 11-1-2010.xls" and "CeLAC Schedule.mpp". It was assumed that initial costs were reported in constant 2009 dollars given instructions regarding O&M costs were to report them in constant 2009 dollars.

Table 7.H.2 - Annual Water Supply Benefits (2009 dollars)

Project: Central Los Angeles County - Regional Water Recycling Program

(a) Year	(b) Type of Benefit: Avoided purchase cost of imported water - Griffith Park South Water Recycling Project (C) Measure of Benefit [Unit]: Acre-feet per Year					(b) Type of Benefit: Avoided purchase cost of imported water - Groundwater replishment study (C) Measure of Benefit [Unit]: Acre-feet per Year					(b) Type of Benefit: (C) Measure of Benefit [Unit]:					Discounting Calculations for Economic Benefits		
	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(h) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009			0		$0			0		$0			0		$0	**$0**	**1.000**	**$0**
2010			0		$0			0		$0			0		$0	**$0**	**0.943**	**$0**
2011			0		$0			0		$0			0		$0	**$0**	**0.890**	**$0**
2012			0		$0			0		$0			0		$0	**$0**	**0.840**	**$0**
2013			0		$0			0		$0			0		$0	**$0**	**0.792**	**$0**
2014	-450	0	450	$583	$262,350			0		$0			0		$0	**$262,350**	**0.747**	**$195,975**
2015	-450	0	450	$604	$271,800			0		$0			0		$0	**$271,800**	**0.705**	**$191,619**
2016	-450	0	450	$626	$281,700			0		$0			0		$0	**$281,700**	**0.665**	**$187,331**
2017	-450	0	450	$649	$292,050			0		$0			0		$0	**$292,050**	**0.627**	**$183,115**
2018	-450	0	450	$672	$302,400			0		$0			0		$0	**$302,400**	**0.592**	**$179,021**
2019	-450	0	450	$697	$313,650			0		$0			0		$0	**$313,650**	**0.558**	**$175,017**
2020	-450	0	450	$722	$324,900			0		$0			0		$0	**$324,900**	**0.527**	**$171,222**
2021	-450	0	450	$729	$328,050			0		$0			0		$0	**$328,050**	**0.497**	**$163,041**
2022	-450	0	450	$736	$331,200			0		$0			0		$0	**$331,200**	**0.469**	**$155,333**
2023	-450	0	450	$743	$334,350			0		$0			0		$0	**$334,350**	**0.442**	**$147,783**
2024	-450	0	450	$751	$337,950			0		$0			0		$0	**$337,950**	**0.417**	**$140,925**
2025	-450	0	450	$758	$341,100			0		$0			0		$0	**$341,100**	**0.390**	**$133,029**
2026	-450	0	450	$765	$344,250			0		$0			0		$0	**$344,250**	**0.371**	**$127,717**
2027	-450	0	450	$773	$347,850			0		$0			0		$0	**$347,850**	**0.350**	**$121,748**
2028	-450	0	450	$780	$351,000			0		$0			0		$0	**$351,000**	**0.331**	**$116,181**
2029	-450	0	450	$788	$354,600			0		$0			0		$0	**$354,600**	**0.312**	**$110,635**
2030	-450	0	450	$796	$358,200			0		$0			0		$0	**$358,200**	**0.294**	**$105,311**
2031	-450	0	450	$804	$361,800			0		$0			0		$0	**$361,800**	**0.278**	**$100,580**
2032	-450	0	450	$811	$364,950			0		$0			0		$0	**$364,950**	**0.262**	**$95,617**
2033	-450	0	450	$820	$369,000			0		$0			0		$0	**$369,000**	**0.247**	**$91,143**
2034	-450	0	450	$828	$372,600			0		$0			0		$0	**$372,600**	**0.233**	**$86,816**
2035	-450	0	450	$836	$376,200			0		$0			0		$0	**$376,200**	**0.220**	**$82,764**
2036	-450	0	450	$844	$379,800			0		$0			0		$0	**$379,800**	**0.207**	**$78,619**
2037	-450	0	450	$852	$383,400			0		$0			0		$0	**$383,400**	**0.196**	**$75,146**
2038	-450	0	450	$860	$387,000			0		$0			0		$0	**$387,000**	**0.185**	**$71,595**
2039	-450	0	450	$869	$391,050			0		$0			0		$0	**$391,050**	**0.174**	**$68,043**
2040	-450	0	450	$878	$395,100			0		$0			0		$0	**$395,100**	**0.164**	**$64,796**
2041	-450	0	450	$886	$398,700			0		$0			0		$0	**$398,700**	**0.155**	**$61,799**
2042	-450	0	450	$894	$402,300			0		$0			0		$0	**$402,300**	**0.146**	**$58,736**
2043	-450	0	450	$903	$406,350			0		$0			0		$0	**$406,350**	**0.138**	**$56,076**
2044	-450	0	450	$912	$410,400			0		$0			0		$0	**$410,400**	**0.130**	**$53,352**
2045	-450	0	450	$921	$414,450			0		$0			0		$0	**$414,450**	**0.123**	**$50,977**
2046	-450	0	450	$930	$418,500			0		$0			0		$0	**$418,500**	**0.116**	**$48,546**
2047	-450	0	450	$939	$422,550			0		$0			0		$0	**$422,550**	**0.109**	**$46,058**
2048	-450	0	450	$949	$427,050			0		$0			0		$0	**$427,050**	**0.103**	**$43,986**
2049	-450	0	450	$958	$431,100			0		$0			0		$0	**$431,100**	**0.097**	**$41,817**
2050	-450	0	450	$967	$435,150			0		$0			0		$0	**$435,150**	**0.092**	**$40,034**
2051	-450	0	450	$977	$439,650			0		$0			0		$0	**$439,650**	**0.087**	**$38,250**
2052	-450	0	450	$986	$443,700			0		$0			0		$0	**$443,700**	**0.082**	**$36,383**
2053	-450	0	450	$996	$448,200			0		$0			0		$0	**$448,200**	**0.077**	**$34,511**
2054	-450	0	450	$1,006	$452,700			0		$0			0		$0	**$452,700**	**0.073**	**$33,047**
2055	-450	0	450	$1,016	$457,200			0		$0			0		$0	**$457,200**	**0.069**	**$31,547**
2056	-450	0	450	$1,025	$461,250			0		$0			0		$0	**$461,250**	**0.065**	**$29,981**
2057	-450	0	450	$1,036	$466,200			0		$0			0		$0	**$466,200**	**0.061**	**$28,438**
2058	-450	0	450	$1,046	$470,700			0		$0			0		$0	**$470,700**	**0.058**	**$27,301**
2059	-450	0	450	$1,056	$475,200			0		$0			0		$0	**$475,200**	**0.054**	**$25,798**
2060	-450	0	450	$1,066	$479,700			0		$0			0		$0	**$479,700**	**0.051**	**$24,568**

Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):	$4,231,326
Project Allocation:	100.0%
Total Present Value of Discounted Benefits (Monetized Benefits):	**$4,231,326**

	Narrative description of benefits: *Avoided cost to purchase MWD tier 2 untreated water, which makes up about 2.3% of LADWP's water supply (12,590AFY of 547,000AFY Total Supply). Golf course receives untreated MWD water for all but 2 weeks when treated wated is purchased. Recycled water will be transported to Roosevelt Golf Course beginning 2014.*	Narrative description of benefits:	Narrative description of benefits:		

Table 7.H.3 - Annual Costs of Avoided Projects (2009 dollars)

Project: Central Los Angeles County - Regional Water Recycling Program

	Alternative (Avoided Project Name): *Avoided Project Description:*				*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Discounting Calculations for Economic Benefits*		
(a) Year	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(e) Total Avoided Costs for All Alts ($)	(f) Discount Value	(g) Discounted Benefits [e x f]
2009				$0				$0				$0	**$0**	**1.000**	**$0**
2010				$0				$0				$0	**$0**	**0.943**	**$0**
2011				$0				$0				$0	**$0**	**0.890**	**$0**
2012				$0				$0				$0	**$0**	**0.840**	**$0**
2013				$0				$0				$0	**$0**	**0.792**	**$0**
2014				$0				$0				$0	**$0**	**0.747**	**$0**
2015				$0				$0				$0	**$0**	**0.705**	**$0**
2016				$0				$0				$0	**$0**	**0.665**	**$0**
2017				$0				$0				$0	**$0**	**0.627**	**$0**
2018				$0				$0				$0	**$0**	**0.592**	**$0**
2019				$0				$0				$0	**$0**	**0.558**	**$0**
2020				$0				$0				$0	**$0**	**0.527**	**$0**
2021				$0				$0				$0	**$0**	**0.497**	**$0**
2022				$0				$0				$0	**$0**	**0.469**	**$0**
2023				$0				$0				$0	**$0**	**0.442**	**$0**
2024				$0				$0				$0	**$0**	**0.417**	**$0**
2025				$0				$0				$0	**$0**	**0.390**	**$0**
2026				$0				$0				$0	**$0**	**0.371**	**$0**
2027				$0				$0				$0	**$0**	**0.350**	**$0**
2028				$0				$0				$0	**$0**	**0.331**	**$0**
2029				$0				$0				$0	**$0**	**0.312**	**$0**
2030				$0				$0				$0	**$0**	**0.294**	**$0**
2031				$0				$0				$0	**$0**	**0.278**	**$0**
2032				$0				$0				$0	**$0**	**0.262**	**$0**
2033				$0				$0				$0	**$0**	**0.247**	**$0**
2034				$0				$0				$0	**$0**	**0.233**	**$0**
2035				$0				$0				$0	**$0**	**0.220**	**$0**
2036				$0				$0				$0	**$0**	**0.207**	**$0**
2037				$0				$0				$0	**$0**	**0.196**	**$0**
2038				$0				$0				$0	**$0**	**0.185**	**$0**
2039				$0				$0				$0	**$0**	**0.174**	**$0**
2040				$0				$0				$0	**$0**	**0.164**	**$0**
2041				$0				$0				$0	**$0**	**0.155**	**$0**
2042				$0				$0				$0	**$0**	**0.146**	**$0**
2043				$0				$0				$0	**$0**	**0.138**	**$0**
2044				$0				$0				$0	**$0**	**0.130**	**$0**
2045				$0				$0				$0	**$0**	**0.123**	**$0**
2046				$0				$0				$0	**$0**	**0.116**	**$0**
2047				$0				$0				$0	**$0**	**0.109**	**$0**
2048				$0				$0				$0	**$0**	**0.103**	**$0**
2049				$0				$0				$0	**$0**	**0.097**	**$0**
2050				$0				$0				$0	**$0**	**0.092**	**$0**
2051				$0				$0				$0	**$0**	**0.087**	**$0**
2052				$0				$0				$0	**$0**	**0.082**	**$0**
2053				$0				$0				$0	**$0**	**0.077**	**$0**
2054				$0				$0				$0	**$0**	**0.073**	**$0**
2055				$0				$0				$0	**$0**	**0.069**	**$0**
2056				$0				$0				$0	**$0**	**0.065**	**$0**
2057				$0				$0				$0	**$0**	**0.061**	**$0**
2058				$0				$0				$0	**$0**	**0.058**	**$0**
2059				$0				$0				$0	**$0**	**0.054**	**$0**
2060				$0				$0				$0	**$0**	**0.051**	**$0**
													Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
													Project Allocation:		100.0%
													Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Table 7.H.4 - Annual Other Water Supply Benefits (2009 dollars)

Project: Central Los Angeles County - Regional Water Recycling Program

	(b) Type of Benefit:	*(b) Type of Benefit:*	*(b) Type of Benefit:*	*Discounting Calculations for Economic Benefits*		
	(C) Description of Benefit:	*(C) Description of Benefit:*	*(C) Description of Benefit:*			
(a) Year	(d) Annual Benefit ($)	(d) Annual Benefit ($)	(d) Annual Benefit ($)	(d) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009	$0	$0	$0	**$0**	**1.000**	**$0**
2010	$0	$0	$0	**$0**	**0.943**	**$0**
2011	$0	$0	$0	**$0**	**0.890**	**$0**
2012	$0	$0	$0	**$0**	**0.840**	**$0**
2013	$0	$0	$0	**$0**	**0.792**	**$0**
2014	$0	$0	$0	**$0**	**0.747**	**$0**
2015	$0	$0	$0	**$0**	**0.705**	**$0**
2016	$0	$0	$0	**$0**	**0.665**	**$0**
2017	$0	$0	$0	**$0**	**0.627**	**$0**
2018	$0	$0	$0	**$0**	**0.592**	**$0**
2019	$0	$0	$0	**$0**	**0.558**	**$0**
2020	$0	$0	$0	**$0**	**0.527**	**$0**
2021	$0	$0	$0	**$0**	**0.497**	**$0**
2022	$0	$0	$0	**$0**	**0.469**	**$0**
2023	$0	$0	$0	**$0**	**0.442**	**$0**
2024	$0	$0	$0	**$0**	**0.417**	**$0**
2025	$0	$0	$0	**$0**	**0.390**	**$0**
2026	$0	$0	$0	**$0**	**0.371**	**$0**
2027	$0	$0	$0	**$0**	**0.350**	**$0**
2028	$0	$0	$0	**$0**	**0.331**	**$0**
2029	$0	$0	$0	**$0**	**0.312**	**$0**
2030	$0	$0	$0	**$0**	**0.294**	**$0**
2031	$0	$0	$0	**$0**	**0.278**	**$0**
2032	$0	$0	$0	**$0**	**0.262**	**$0**
2033	$0	$0	$0	**$0**	**0.247**	**$0**
2034	$0	$0	$0	**$0**	**0.233**	**$0**
2035	$0	$0	$0	**$0**	**0.220**	**$0**
2036	$0	$0	$0	**$0**	**0.207**	**$0**
2037	$0	$0	$0	**$0**	**0.196**	**$0**
2038	$0	$0	$0	**$0**	**0.185**	**$0**
2039	$0	$0	$0	**$0**	**0.174**	**$0**
2040	$0	$0	$0	**$0**	**0.164**	**$0**
2041	$0	$0	$0	**$0**	**0.155**	**$0**
2042	$0	$0	$0	**$0**	**0.146**	**$0**
2043	$0	$0	$0	**$0**	**0.138**	**$0**
2044	$0	$0	$0	**$0**	**0.130**	**$0**
2045	$0	$0	$0	**$0**	**0.123**	**$0**
2046	$0	$0	$0	**$0**	**0.116**	**$0**
2047	$0	$0	$0	**$0**	**0.109**	**$0**
2048	$0	$0	$0	**$0**	**0.103**	**$0**
2049	$0	$0	$0	**$0**	**0.097**	**$0**
2050	$0	$0	$0	**$0**	**0.092**	**$0**
2051	$0	$0	$0	**$0**	**0.087**	**$0**
2052	$0	$0	$0	**$0**	**0.082**	**$0**
2053	$0	$0	$0	**$0**	**0.077**	**$0**
2054	$0	$0	$0	**$0**	**0.073**	**$0**
2055	$0	$0	$0	**$0**	**0.069**	**$0**
2056	$0	$0	$0	**$0**	**0.065**	**$0**
2057	$0	$0	$0	**$0**	**0.061**	**$0**
2058	$0	$0	$0	**$0**	**0.058**	**$0**
2059	$0	$0	$0	**$0**	**0.054**	**$0**
2060	$0	$0	$0	**$0**	**0.051**	**$0**
				Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
				Project Allocation:		100.0%
				Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Table 7.H.5 - Total Water Supply Benefits (2009 dollars)			
Project: Central Los Angeles County - Regional Water Recycling Program			
(a) Total Discounted Water Supply Benefits	**(b) Total Discounted Avoided Project Costs**	**(c) Other Discounted Water Supply Benefits**	**(d) Total Value of Discounted Benefits [a + c] or [b + c]**
$4,231,326	$0	$0	**$4,231,326**
Comments:			

APPENDIX I

Enhancement Project – Tujunga Spreading Grounds – Los Angeles Department of Water and Power

Table 7.I.1 - Annual Cost of Project
(All costs should be in 2009 dollars)
Project: Tujunga Spreading Grounds Enhancement Project

Year	Initial Costs	Operations and Maintenance Costs						Discounting Calculations	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	Grand Total Cost from Table 7 (row (i), column (d))	Admin	Operation	Maintenance	Replacement	Other	Total Costs (a)+…+(f)	Discount Factor	Discounted Costs (g) x (h)
2009	$229,151	$0	$0	$0	$0	$0	$229,151	1.00	$229,151
2010	$231,829	$0	$0	$0	$0	$0	$231,829	0.94	$218,614
2011	$5,876,472	$0	$0	$0	$0	$0	$5,876,472	0.89	$5,230,060
2012	$12,236,250	$0	$0	$0	$0	$0	$12,236,250	0.84	$10,278,450
2013	$6,594,954	$25,000	$80,000	$173,517	$0	$0	$6,873,471	0.79	$5,443,789
2014	$135,466	$25,000	$80,000	$173,517	$0	$0	$413,983	0.75	$309,245
2015	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.71	$196,354
2016	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.67	$185,214
2017	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.63	$174,630
2018	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.59	$164,882
2019	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.56	$155,412
2020	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.53	$146,778
2021	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.50	$138,423
2022	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.47	$130,624
2023	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.44	$123,105
2024	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.42	$116,142
2025	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.39	$108,622
2026	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.37	$103,330
2027	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.35	$97,481
2028	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.33	$92,189
2029	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.31	$86,897
2030	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.29	$81,884
2031	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.28	$77,428
2032	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.26	$72,971
2033	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.25	$68,794
2034	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.23	$64,894
2035	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.22	$61,274
2036	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.21	$57,653
2037	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.20	$54,589
2038	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.19	$51,526
2039	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.17	$48,462
2040	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.16	$45,677
2041	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.16	$43,170
2042	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.15	$40,663
2043	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.14	$38,435
2044	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.13	$36,207
2045	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.12	$34,258
2046	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.12	$32,308
2047	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.11	$30,358
2048	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.10	$28,687
2049	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.10	$27,016
2050	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.09	$25,624
2051	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.09	$24,231
2052	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.08	$22,838
2053	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.08	$21,446
2054	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.07	$20,332
2055	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.07	$19,218
2056	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.07	$18,104
2057	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.06	$16,990
2058	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.06	$16,154
2059	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.05	$15,120
2060	$0	$25,000	$80,000	$173,517	$0	$0	$278,517	0.05	$14,264
Project Life							Total Present Value of Discounted Costs (Sum of Column (i))		
							Transfer to Table 20, Column (c), Exhibit F: Proposal Costs and Benefit Summaries		**$24,939,968**

Comments: *Currently the standing Operations and Maintenance agreement between LADWP and LACFCD (Agreement #10400) stipulates that the County will maintain and operate the spreading basin at no cost to LADWP. However, due to the proposed improvements to the facility, a new Operation and Maintenance agreement will be issued to address the added scope and dimension to the project. Future O&M cost have not been discussed with the County (proposed operator) since the designs have not been completed*

Table 7.I.2 - Annual Water Supply Benefits (2009 dollars)

Project: Tujunga Spreading Grounds Enhancement Project

(a) Year	*(b) Type of Benefit: Avoided Cost of Purchasing Imported Water (C) Measure of Benefit [Unit]: AF per year*					*(b) Type of Benefit: (C) Measure of Benefit [Unit]:*					*(b) Type of Benefit: (C) Measure of Benefit [Unit]:*					*Discounting Calculations for Economic Benefits*		
	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(h) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009			0		$0			0		$0			0		$0	**$0**	**1.000**	**$0**
2010			0		$0			0		$0			0		$0	**$0**	**0.943**	**$0**
2011			0		$0			0		$0			0		$0	**$0**	**0.890**	**$0**
2012			0		$0			0		$0			0		$0	**$0**	**0.840**	**$0**
2013	-8,000	0	8,000	$560	$4,480,000			0		$0			0		$0	**$4,480,000**	**0.792**	**$3,548,160**
2014	-8,000	0	8,000	$583	$4,664,000			0		$0			0		$0	**$4,664,000**	**0.747**	**$3,484,008**
2015	-8,000	0	8,000	$604	$4,832,000			0		$0			0		$0	**$4,832,000**	**0.705**	**$3,406,560**
2016	-8,000	0	8,000	$626	$5,008,000			0		$0			0		$0	**$5,008,000**	**0.665**	**$3,330,320**
2017	-8,000	0	8,000	$649	$5,192,000			0		$0			0		$0	**$5,192,000**	**0.627**	**$3,255,384**
2018	-8,000	0	8,000	$672	$5,376,000			0		$0			0		$0	**$5,376,000**	**0.592**	**$3,182,592**
2019	-8,000	0	8,000	$697	$5,576,000			0		$0			0		$0	**$5,576,000**	**0.558**	**$3,111,408**
2020	-8,000	0	8,000	$722	$5,776,000			0		$0			0		$0	**$5,776,000**	**0.527**	**$3,043,952**
2021	-8,000	0	8,000	$729	$5,832,000			0		$0			0		$0	**$5,832,000**	**0.497**	**$2,898,504**
2022	-8,000	0	8,000	$736	$5,888,000			0		$0			0		$0	**$5,888,000**	**0.469**	**$2,761,472**
2023	-8,000	0	8,000	$743	$5,944,000			0		$0			0		$0	**$5,944,000**	**0.442**	**$2,627,248**
2024	-8,000	0	8,000	$751	$6,008,000			0		$0			0		$0	**$6,008,000**	**0.417**	**$2,505,336**
2025	-8,000	0	8,000	$758	$6,064,000			0		$0			0		$0	**$6,064,000**	**0.390**	**$2,364,960**
2026	-8,000	0	8,000	$765	$6,120,000			0		$0			0		$0	**$6,120,000**	**0.371**	**$2,270,520**
2027	-8,000	0	8,000	$773	$6,184,000			0		$0			0		$0	**$6,184,000**	**0.350**	**$2,164,400**
2028	-8,000	0	8,000	$780	$6,240,000			0		$0			0		$0	**$6,240,000**	**0.331**	**$2,065,440**
2029	-8,000	0	8,000	$788	$6,304,000			0		$0			0		$0	**$6,304,000**	**0.312**	**$1,966,848**
2030	-8,000	0	8,000	$796	$6,368,000			0		$0			0		$0	**$6,368,000**	**0.294**	**$1,872,192**
2031	-8,000	0	8,000	$804	$6,432,000			0		$0			0		$0	**$6,432,000**	**0.278**	**$1,788,096**
2032	-8,000	0	8,000	$811	$6,488,000			0		$0			0		$0	**$6,488,000**	**0.262**	**$1,699,856**
2033	-8,000	0	8,000	$820	$6,560,000			0		$0			0		$0	**$6,560,000**	**0.247**	**$1,620,320**
2034	-8,000	0	8,000	$828	$6,624,000			0		$0			0		$0	**$6,624,000**	**0.233**	**$1,543,392**
2035	-8,000	0	8,000	$836	$6,688,000			0		$0			0		$0	**$6,688,000**	**0.220**	**$1,471,360**
2036	-8,000	0	8,000	$844	$6,752,000			0		$0			0		$0	**$6,752,000**	**0.207**	**$1,397,664**
2037	-8,000	0	8,000	$852	$6,816,000			0		$0			0		$0	**$6,816,000**	**0.196**	**$1,335,936**
2038	-8,000	0	8,000	$860	$6,880,000			0		$0			0		$0	**$6,880,000**	**0.185**	**$1,272,800**
2039	-8,000	0	8,000	$869	$6,952,000			0		$0			0		$0	**$6,952,000**	**0.174**	**$1,209,648**
2040	-8,000	0	8,000	$878	$7,024,000			0		$0			0		$0	**$7,024,000**	**0.164**	**$1,151,936**
2041	-8,000	0	8,000	$886	$7,088,000			0		$0			0		$0	**$7,088,000**	**0.155**	**$1,098,640**
2042	-8,000	0	8,000	$894	$7,152,000			0		$0			0		$0	**$7,152,000**	**0.146**	**$1,044,192**
2043	-8,000	0	8,000	$903	$7,224,000			0		$0			0		$0	**$7,224,000**	**0.138**	**$996,912**
2044	-8,000	0	8,000	$912	$7,296,000			0		$0			0		$0	**$7,296,000**	**0.130**	**$948,480**
2045	-8,000	0	8,000	$921	$7,368,000			0		$0			0		$0	**$7,368,000**	**0.123**	**$906,264**
2046	-8,000	0	8,000	$930	$7,440,000			0		$0			0		$0	**$7,440,000**	**0.116**	**$863,040**
2047	-8,000	0	8,000	$939	$7,512,000			0		$0			0		$0	**$7,512,000**	**0.109**	**$818,808**
2048	-8,000	0	8,000	$949	$7,592,000			0		$0			0		$0	**$7,592,000**	**0.103**	**$781,976**
2049	-8,000	0	8,000	$958	$7,664,000			0		$0			0		$0	**$7,664,000**	**0.097**	**$743,408**
2050	-8,000	0	8,000	$967	$7,736,000			0		$0			0		$0	**$7,736,000**	**0.092**	**$711,712**
2051	-8,000	0	8,000	$977	$7,816,000			0		$0			0		$0	**$7,816,000**	**0.087**	**$679,992**
2052	-8,000	0	8,000	$986	$7,888,000			0		$0			0		$0	**$7,888,000**	**0.082**	**$646,816**
2053	-8,000	0	8,000	$996	$7,968,000			0		$0			0		$0	**$7,968,000**	**0.077**	**$613,536**
2054	-8,000	0	8,000	$1,006	$8,048,000			0		$0			0		$0	**$8,048,000**	**0.073**	**$587,504**
2055	-8,000	0	8,000	$1,016	$8,128,000			0		$0			0		$0	**$8,128,000**	**0.069**	**$560,832**
2056	-8,000	0	8,000	$1,025	$8,200,000			0		$0			0		$0	**$8,200,000**	**0.065**	**$533,000**
2057	-8,000	0	8,000	$1,036	$8,288,000			0		$0			0		$0	**$8,288,000**	**0.061**	**$505,568**
2058	-8,000	0	8,000	$1,046	$8,368,000			0		$0			0		$0	**$8,368,000**	**0.058**	**$485,344**
2059	-8,000	0	8,000	$1,056	$8,448,000			0		$0			0		$0	**$8,448,000**	**0.054**	**$458,628**
2060	-8,000	0	8,000	$1,066	$8,528,000			0		$0			0		$0	**$8,528,000**	**0.051**	**$436,765**

Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):	$78,771,729
Project Allocation:	100.0%
Total Present Value of Discounted Benefits (Monetized Benefits):	**$78,771,729**

Comments: *The increase amount of stormwater capture will average 8,000 AF per year. The capture volume is not excepted to deviate much from the average for the life of the project (50 years). It is assumed that higher than average wet seasons will cancel the dryer than average seasons.*

Table7.I.3 - Annual Costs of Avoided Projects (2009 dollars)

Project: Tujunga Spreading Grounds Enhancement Project

(a) Year	*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Discounting Calculations for Economic Benefits*		
	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(e) Total Avoided Costs for All Alts ($)	(f) Discount Value	(g) Discounted Benefits [e x f]
2009				$0				$0				$0	**$0**	**1.000**	**$0**
2010				$0				$0				$0	**$0**	**0.943**	**$0**
2011				$0				$0				$0	**$0**	**0.890**	**$0**
2012				$0				$0				$0	**$0**	**0.840**	**$0**
2013				$0				$0				$0	**$0**	**0.792**	**$0**
2014				$0				$0				$0	**$0**	**0.747**	**$0**
2015				$0				$0				$0	**$0**	**0.705**	**$0**
2016				$0				$0				$0	**$0**	**0.665**	**$0**
2017				$0				$0				$0	**$0**	**0.627**	**$0**
2018				$0				$0				$0	**$0**	**0.592**	**$0**
2019				$0				$0				$0	**$0**	**0.558**	**$0**
2020				$0				$0				$0	**$0**	**0.527**	**$0**
2021				$0				$0				$0	**$0**	**0.497**	**$0**
2022				$0				$0				$0	**$0**	**0.469**	**$0**
2023				$0				$0				$0	**$0**	**0.442**	**$0**
2024				$0				$0				$0	**$0**	**0.417**	**$0**
2025				$0				$0				$0	**$0**	**0.390**	**$0**
2026				$0				$0				$0	**$0**	**0.371**	**$0**
2027				$0				$0				$0	**$0**	**0.350**	**$0**
2028				$0				$0				$0	**$0**	**0.331**	**$0**
2029				$0				$0				$0	**$0**	**0.312**	**$0**
2030				$0				$0				$0	**$0**	**0.294**	**$0**
2031				$0				$0				$0	**$0**	**0.278**	**$0**
2032				$0				$0				$0	**$0**	**0.262**	**$0**
2033				$0				$0				$0	**$0**	**0.247**	**$0**
2034				$0				$0				$0	**$0**	**0.233**	**$0**
2035				$0				$0				$0	**$0**	**0.220**	**$0**
2036				$0				$0				$0	**$0**	**0.207**	**$0**
2037				$0				$0				$0	**$0**	**0.196**	**$0**
2038				$0				$0				$0	**$0**	**0.185**	**$0**
2039				$0				$0				$0	**$0**	**0.174**	**$0**
2040				$0				$0				$0	**$0**	**0.164**	**$0**
2041				$0				$0				$0	**$0**	**0.155**	**$0**
2042				$0				$0				$0	**$0**	**0.146**	**$0**
2043				$0				$0				$0	**$0**	**0.138**	**$0**
2044				$0				$0				$0	**$0**	**0.130**	**$0**
2045				$0				$0				$0	**$0**	**0.123**	**$0**
2046				$0				$0				$0	**$0**	**0.116**	**$0**
2047				$0				$0				$0	**$0**	**0.109**	**$0**
2048				$0				$0				$0	**$0**	**0.103**	**$0**
2049				$0				$0				$0	**$0**	**0.097**	**$0**
2050				$0				$0				$0	**$0**	**0.092**	**$0**
2051				$0				$0				$0	**$0**	**0.087**	**$0**
2052				$0				$0				$0	**$0**	**0.082**	**$0**
2053				$0				$0				$0	**$0**	**0.077**	**$0**
2054				$0				$0				$0	**$0**	**0.073**	**$0**
2055				$0				$0				$0	**$0**	**0.069**	**$0**
2056				$0				$0				$0	**$0**	**0.065**	**$0**
2057				$0				$0				$0	**$0**	**0.061**	**$0**
2058				$0				$0				$0	**$0**	**0.058**	**$0**
2059				$0				$0				$0	**$0**	**0.054**	**$0**
2060				$0				$0				$0	**$0**	**0.051**	**$0**
													Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
													Project Allocation:		100.0%
													Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Table 7.I.4 - Annual Other Water Supply Benefits (2009 dollars)

Project: Tujunga Spreading Grounds Enhancement Project

(a) Year	*(b) Type of Benefit:* *(C) Description of Benefit:*	*(b) Type of Benefit:* *(C) Description of Benefit:*	*(b) Type of Benefit:* *(C) Description of Benefit:*	*Discounting Calculations for Economic Benefits*		
	(d) Annual Benefit ($)	(d) Annual Benefit ($)	(d) Annual Benefit ($)	(d) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009	$0	$0	$0	**$0**	**1.000**	**$0**
2010	$0	$0	$0	**$0**	**0.943**	**$0**
2011	$0	$0	$0	**$0**	**0.890**	**$0**
2012	$0	$0	$0	**$0**	**0.840**	**$0**
2013	$0	$0	$0	**$0**	**0.792**	**$0**
2014	$0	$0	$0	**$0**	**0.747**	**$0**
2015	$0	$0	$0	**$0**	**0.705**	**$0**
2016	$0	$0	$0	**$0**	**0.665**	**$0**
2017	$0	$0	$0	**$0**	**0.627**	**$0**
2018	$0	$0	$0	**$0**	**0.592**	**$0**
2019	$0	$0	$0	**$0**	**0.558**	**$0**
2020	$0	$0	$0	**$0**	**0.527**	**$0**
2021	$0	$0	$0	**$0**	**0.497**	**$0**
2022	$0	$0	$0	**$0**	**0.469**	**$0**
2023	$0	$0	$0	**$0**	**0.442**	**$0**
2024	$0	$0	$0	**$0**	**0.417**	**$0**
2025	$0	$0	$0	**$0**	**0.390**	**$0**
2026	$0	$0	$0	**$0**	**0.371**	**$0**
2027	$0	$0	$0	**$0**	**0.350**	**$0**
2028	$0	$0	$0	**$0**	**0.331**	**$0**
2029	$0	$0	$0	**$0**	**0.312**	**$0**
2030	$0	$0	$0	**$0**	**0.294**	**$0**
2031	$0	$0	$0	**$0**	**0.278**	**$0**
2032	$0	$0	$0	**$0**	**0.262**	**$0**
2033	$0	$0	$0	**$0**	**0.247**	**$0**
2034	$0	$0	$0	**$0**	**0.233**	**$0**
2035	$0	$0	$0	**$0**	**0.220**	**$0**
2036	$0	$0	$0	**$0**	**0.207**	**$0**
2037	$0	$0	$0	**$0**	**0.196**	**$0**
2038	$0	$0	$0	**$0**	**0.185**	**$0**
2039	$0	$0	$0	**$0**	**0.174**	**$0**
2040	$0	$0	$0	**$0**	**0.164**	**$0**
2041	$0	$0	$0	**$0**	**0.155**	**$0**
2042	$0	$0	$0	**$0**	**0.146**	**$0**
2043	$0	$0	$0	**$0**	**0.138**	**$0**
2044	$0	$0	$0	**$0**	**0.130**	**$0**
2045	$0	$0	$0	**$0**	**0.123**	**$0**
2046	$0	$0	$0	**$0**	**0.116**	**$0**
2047	$0	$0	$0	**$0**	**0.109**	**$0**
2048	$0	$0	$0	**$0**	**0.103**	**$0**
2049	$0	$0	$0	**$0**	**0.097**	**$0**
2050	$0	$0	$0	**$0**	**0.092**	**$0**
2051	$0	$0	$0	**$0**	**0.087**	**$0**
2052	$0	$0	$0	**$0**	**0.082**	**$0**
2053	$0	$0	$0	**$0**	**0.077**	**$0**
2054	$0	$0	$0	**$0**	**0.073**	**$0**
2055	$0	$0	$0	**$0**	**0.069**	**$0**
2056	$0	$0	$0	**$0**	**0.065**	**$0**
2057	$0	$0	$0	**$0**	**0.061**	**$0**
2058	$0	$0	$0	**$0**	**0.058**	**$0**
2059	$0	$0	$0	**$0**	**0.054**	**$0**
2060	$0	$0	$0	**$0**	**0.051**	**$0**
				Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
				Project Allocation:		100.0%
				Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Table 7.I.5 - Total Water Supply Benefits (2009 dollars)			
Project: Tujunga Spreading Grounds Enhancement Project			
(a) Total Discounted Water Supply Benefits	**(b) Total Discounted Avoided Project Costs**	**(c) Other Discounted Water Supply Benefits**	**(d) Total Value of Discounted Benefits [a + c] or [b + c]**
$78,771,729	$0	$0	**$78,771,729**
Comments:			

APPENDIX J

San Antonio Spreading Grounds Improvements – Three Valleys Municipal Water District

Table 7.J.1 - Annual Cost of Project
(All costs should be in 2009 dollars)
Project: San Antonio Spreading Grounds Improvements

Year	Initial Costs	Operations and Maintenance Costs						Discounting Calculations	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	Grand Total Cost from Table 7 (row (i), column (d))	Admin	Operation	Maintenance	Replacement	Other	Total Costs (a)+…+(f)	Discount Factor	Discounted Costs (g) x (h)
2009	$0	$0	$0	$0	$0	$0	$0	1.000	$0
2010	$0	$0	$0	$0	$0	$0	$0	0.943	$0
2011	$229,937	$1,232	$7,429	$3,659	$0	$0	$242,257	0.890	$215,608
2012	$2,383,351	$1,232	$7,429	$3,659	$0	$0	$2,395,671	0.840	$2,011,452
2013	$2,386,512	$1,232	$7,429	$3,659	$0	$0	$2,398,832	0.792	$1,900,100
2014	$0	$1,232	$7,429	$3,659	$0	$0	$12,320	0.747	$9,206
2015		$1,232	$7,429	$3,659	$0	$0	$12,320	0.705	$8,685
2016		$1,232	$7,429	$3,659	$0	$0	$12,320	0.665	$8,194
2017		$1,232	$7,429	$3,659	$0	$0	$12,320	0.627	$7,730
2018		$1,232	$7,429	$3,659	$0	$0	$12,320	0.592	$7,292
2019		$1,232	$7,429	$3,659	$0	$0	$12,320	0.558	$6,879
2020		$1,232	$7,429	$3,659	$0	$0	$12,320	0.527	$6,490
2021		$1,232	$7,429	$3,659	$0	$0	$12,320	0.497	$6,123
2022		$1,232	$7,429	$3,659	$0	$0	$12,320	0.469	$5,776
2023		$1,232	$7,429	$3,659	$0	$0	$12,320	0.442	$5,449
2024		$1,232	$7,429	$3,659	$0	$0	$12,320	0.417	$5,141
2025		$1,232	$7,429	$3,659	$0	$0	$12,320	0.394	$4,850
2026		$1,232	$7,429	$3,659	$0	$0	$12,320	0.371	$4,575
2027		$1,232	$7,429	$3,659	$0	$0	$12,320	0.350	$4,316
2028		$1,232	$7,429	$3,659	$0	$0	$12,320	0.331	$4,072
2029		$1,232	$7,429	$3,659	$0	$0	$12,320	0.312	$3,841
2030		$1,232	$7,429	$3,659	$0	$0	$12,320	0.294	$3,624
2031		$1,232	$7,429	$3,659	$0	$0	$12,320	0.278	$3,419
2032		$1,232	$7,429	$3,659	$0	$0	$12,320	0.262	$3,225
2033		$1,232	$7,429	$3,659	$0	$0	$12,320	0.247	$3,043
2034		$1,232	$7,429	$3,659	$0	$0	$12,320	0.233	$2,871
2035		$1,232	$7,429	$3,659	$0	$0	$12,320	0.220	$2,708
2036		$1,232	$7,429	$3,659	$0	$0	$12,320	0.207	$2,555
2037		$1,232	$7,429	$3,659	$0	$0	$12,320	0.196	$2,410
2038		$1,232	$7,429	$3,659	$0	$0	$12,320	0.185	$2,274
2039		$1,232	$7,429	$3,659	$0	$0	$12,320	0.174	$2,145
2040		$1,232	$7,429	$3,659	$0	$0	$12,320	0.164	$2,024
2041		$1,232	$7,429	$3,659	$0	$0	$12,320	0.155	$1,909
2042		$1,232	$7,429	$3,659	$0	$0	$12,320	0.146	$1,801
2043		$1,232	$7,429	$3,659	$0	$0	$12,320	0.138	$1,699
2044		$1,232	$7,429	$3,659	$0	$0	$12,320	0.130	$1,603
2045		$1,232	$7,429	$3,659	$0	$0	$12,320	0.123	$1,512
2046		$1,232	$7,429	$3,659	$0	$0	$12,320	0.116	$1,427
2047		$1,232	$7,429	$3,659	$0	$0	$12,320	0.109	$1,346
2048		$1,232	$7,429	$3,659	$0	$0	$12,320	0.103	$1,270
2049		$1,232	$7,429	$3,659	$0	$0	$12,320	0.097	$1,198
2050		$1,232	$7,429	$3,659	$0	$0	$12,320	0.092	$1,130
2051		$1,232	$7,429	$3,659	$0	$0	$12,320	0.087	$1,066
2052		$1,232	$7,429	$3,659	$0	$0	$12,320	0.082	$1,006
2053		$1,232	$7,429	$3,659	$0	$0	$12,320	0.077	$949
2054		$1,232	$7,429	$3,659	$0	$0	$12,320	0.073	$895
2055		$1,232	$7,429	$3,659	$0	$0	$12,320	0.069	$844
2056		$1,232	$7,429	$3,659	$0	$0	$12,320	0.065	$797
2057		$1,232	$7,429	$3,659	$0	$0	$12,320	0.061	$752
2058		$1,232	$7,429	$3,659	$0	$0	$12,320	0.058	$709
2059		$1,232	$7,429	$3,659	$0	$0	$12,320	0.054	$669
2060		$1,232	$7,429	$3,659	$0	$0	$12,320	0.051	$631
								Total Present Value of Discounted Costs (Sum of Column (i))	
Project Life								Transfer to Table 20, Column (c), Exhibit F: Proposal Costs and Benefit Summaries	**$4,279,286**

Comments: *Based on the 2005 Feasibility Study's Annual Operating Cost, Table 8-5 & 8-6. Costs were further extrapolated based on % length the previous (4,771-LF, 45% of total estimated costs) spreading pipelines are to each other. Administration, Operation & Maintenance were estimated to be 10%, 60.3%, & 29.7% of total annual costs. See O&M workesheet.*

Table 7.J.2 - Annual Water Supply Benefits (2009 dollars)

Project: San Antonio Spreading Grounds Improvements

(a) Year	*(b) Type of Benefit: Ability to Purchase/Use Less Expensive Surplus Water (C) Measure of Benefit [Unit]: AFY*					*(b) Type of Benefit: (C) Measure of Benefit [Unit]:*					*(b) Type of Benefit: (C) Measure of Benefit [Unit]:*					*Discounting Calculations for Economic Benefits*		
	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(h) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009					$0			0		$0			0		$0	**$0**	**1.000**	**$0**
2010					$0			0		$0			0		$0	**$0**	**0.943**	**$0**
2011					$0			0		$0			0		$0	**$0**	**0.890**	**$0**
2012					$0			0		$0			0		$0	**$0**	**0.840**	**$0**
2013					$0			0		$0			0		$0	**$0**	**0.792**	**$0**
2014	-8,250	0	8,250	$243	$2,004,750			0		$0			0		$0	**$2,004,750**	**0.747**	**$1,497,548**
2015	-8,250	0	8,250	$252	$2,079,000			0		$0			0		$0	**$2,079,000**	**0.705**	**$1,465,695**
2016	-8,250	0	8,250	$261	$2,153,250			0		$0			0		$0	**$2,153,250**	**0.665**	**$1,431,911**
2017	-8,250	0	8,250	$270	$2,227,500			0		$0			0		$0	**$2,227,500**	**0.627**	**$1,396,643**
2018	-8,250	0	8,250	$280	$2,310,000			0		$0			0		$0	**$2,310,000**	**0.592**	**$1,367,520**
2019	-8,250	0	8,250	$290	$2,392,500			0		$0			0		$0	**$2,392,500**	**0.558**	**$1,335,015**
2020	-8,250	0	8,250	$301	$2,483,250			0		$0			0		$0	**$2,483,250**	**0.527**	**$1,308,673**
2021	-8,250	0	8,250	$303	$2,499,750			0		$0			0		$0	**$2,499,750**	**0.497**	**$1,242,376**
2022	-8,250	0	8,250	$307	$2,532,750			0		$0			0		$0	**$2,532,750**	**0.469**	**$1,187,860**
2023	-8,250	0	8,250	$310	$2,557,500			0		$0			0		$0	**$2,557,500**	**0.442**	**$1,130,415**
2024	-8,250	0	8,250	$312	$2,574,000			0		$0			0		$0	**$2,574,000**	**0.417**	**$1,073,358**
2025	-8,250	0	8,250	$315	$2,598,750			0		$0			0		$0	**$2,598,750**	**0.390**	**$1,013,513**
2026	-8,250	0	8,250	$319	$2,631,750			0		$0			0		$0	**$2,631,750**	**0.371**	**$976,379**
2027	-8,250	0	8,250	$322	$2,656,500			0		$0			0		$0	**$2,656,500**	**0.350**	**$929,775**
2028	-8,250	0	8,250	$325	$2,681,250			0		$0			0		$0	**$2,681,250**	**0.331**	**$887,494**
2029	-8,250	0	8,250	$328	$2,706,000			0		$0			0		$0	**$2,706,000**	**0.312**	**$844,272**
2030	-8,250	0	8,250	$331	$2,730,750			0		$0			0		$0	**$2,730,750**	**0.294**	**$802,841**
2031	-8,250	0	8,250	$334	$2,755,500			0		$0			0		$0	**$2,755,500**	**0.278**	**$766,029**
2032	-8,250	0	8,250	$338	$2,788,500			0		$0			0		$0	**$2,788,500**	**0.262**	**$730,587**
2033	-8,250	0	8,250	$341	$2,813,250			0		$0			0		$0	**$2,813,250**	**0.247**	**$694,873**
2034	-8,250	0	8,250	$344	$2,838,000			0		$0			0		$0	**$2,838,000**	**0.233**	**$661,254**
2035	-8,250	0	8,250	$348	$2,871,000			0		$0			0		$0	**$2,871,000**	**0.220**	**$631,620**
2036	-8,250	0	8,250	$351	$2,895,750			0		$0			0		$0	**$2,895,750**	**0.207**	**$599,420**
2037	-8,250	0	8,250	$355	$2,928,750			0		$0			0		$0	**$2,928,750**	**0.196**	**$574,035**
2038	-8,250	0	8,250	$359	$2,961,750			0		$0			0		$0	**$2,961,750**	**0.185**	**$547,924**
2039	-8,250	0	8,250	$362	$2,986,500			0		$0			0		$0	**$2,986,500**	**0.174**	**$519,651**
2040	-8,250	0	8,250	$365	$3,011,250			0		$0			0		$0	**$3,011,250**	**0.164**	**$493,845**
2041	-8,250	0	8,250	$369	$3,044,250			0		$0			0		$0	**$3,044,250**	**0.155**	**$471,859**
2042	-8,250	0	8,250	$373	$3,077,250			0		$0			0		$0	**$3,077,250**	**0.146**	**$449,279**
2043	-8,250	0	8,250	$377	$3,110,250			0		$0			0		$0	**$3,110,250**	**0.138**	**$429,215**
2044	-8,250	0	8,250	$380	$3,135,000			0		$0			0		$0	**$3,135,000**	**0.130**	**$407,550**
2045	-8,250	0	8,250	$384	$3,168,000			0		$0			0		$0	**$3,168,000**	**0.123**	**$389,664**
2046	-8,250	0	8,250	$388	$3,201,000			0		$0			0		$0	**$3,201,000**	**0.116**	**$371,316**
2047	-8,250	0	8,250	$391	$3,225,750			0		$0			0		$0	**$3,225,750**	**0.109**	**$351,607**
2048	-8,250	0	8,250	$395	$3,258,750			0		$0			0		$0	**$3,258,750**	**0.103**	**$335,651**
2049	-8,250	0	8,250	$399	$3,291,750			0		$0			0		$0	**$3,291,750**	**0.097**	**$319,300**
2050	-8,250	0	8,250	$403	$3,324,750			0		$0			0		$0	**$3,324,750**	**0.092**	**$305,877**
2051	-8,250	0	8,250	$406	$3,349,500			0		$0			0		$0	**$3,349,500**	**0.087**	**$291,407**
2052	-8,250	0	8,250	$411	$3,390,750			0		$0			0		$0	**$3,390,750**	**0.082**	**$278,042**
2053	-8,250	0	8,250	$415	$3,423,750			0		$0			0		$0	**$3,423,750**	**0.077**	**$263,629**
2054	-8,250	0	8,250	$418	$3,448,500			0		$0			0		$0	**$3,448,500**	**0.073**	**$251,741**
2055	-8,250	0	8,250	$423	$3,489,750			0		$0			0		$0	**$3,489,750**	**0.069**	**$240,793**
2056	-8,250	0	8,250	$427	$3,522,750			0		$0			0		$0	**$3,522,750**	**0.065**	**$228,979**
2057	-8,250	0	8,250	$431	$3,555,750			0		$0			0		$0	**$3,555,750**	**0.061**	**$216,901**
2058	-8,250	0	8,250	$435	$3,588,750			0		$0			0		$0	**$3,588,750**	**0.058**	**$208,148**
2059	-8,250	0	8,250	$440	$3,630,000			0		$0			0		$0	**$3,630,000**	**0.054**	**$197,067**
2060	-8,250	0	8,250	$444	$3,663,000			0		$0			0		$0	**$3,663,000**	**0.051**	**$187,602**

Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):	$32,306,146
Project Allocation:	100.0%
Total Present Value of Discounted Benefits (Monetized Benefits):	**$32,306,146**

	Narrative description of benefits: *Costs will be the difference between using Met Tier 1 treated water and Met Untreated.*	**Narrative description of benefits:**	**Narrative description of benefits:**

Comments: *this table is based on an estimated 15,000-AFY, the pipeline would spread when fully constructed and operational. 55% is the proportion allocated to the northern (this proposed project) alignment, and the 45% allocated to the southern (already completed and operational) alignment. This table only considers water benefit / supply the completed facility would be able to deliver to the San Antonio Spreading Grounds. These benefits / costs are based upon 2009 dollars to purchase or sell the water. The "Value" column is the price differential between purchasing treated (Tier 1 & 2) water, to purchasing untreated water, spreading & extracting it. These references to the "Narrative" column 2009 & 2010: based on water supplied from existing pipeline. 2011 to 2060: based on estimated water supply spread after proposed facilities are completed & operating.*

Table 7.J.3 - Annual Costs of Avoided Projects (2009 dollars)

Project: San Antonio Spreading Grounds Improvements

(a) Year	*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Discounting Calculations for Economic Benefits*		
	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(e) Total Avoided Costs for All Alts ($)	(f) Discount Value	(g) Discounted Benefits [e x f]
2009				$0				$0				$0	**$0**	**1.000**	**$0**
2010				$0				$0				$0	**$0**	**0.943**	**$0**
2011				$0				$0				$0	**$0**	**0.890**	**$0**
2012				$0				$0				$0	**$0**	**0.840**	**$0**
2013				$0				$0				$0	**$0**	**0.792**	**$0**
2014				$0				$0				$0	**$0**	**0.747**	**$0**
2015				$0				$0				$0	**$0**	**0.705**	**$0**
2016				$0				$0				$0	**$0**	**0.665**	**$0**
2017				$0				$0				$0	**$0**	**0.627**	**$0**
2018				$0				$0				$0	**$0**	**0.592**	**$0**
2019				$0				$0				$0	**$0**	**0.558**	**$0**
2020				$0				$0				$0	**$0**	**0.527**	**$0**
2021				$0				$0				$0	**$0**	**0.497**	**$0**
2022				$0				$0				$0	**$0**	**0.469**	**$0**
2023				$0				$0				$0	**$0**	**0.442**	**$0**
2024				$0				$0				$0	**$0**	**0.417**	**$0**
2025				$0				$0				$0	**$0**	**0.390**	**$0**
2026				$0				$0				$0	**$0**	**0.371**	**$0**
2027				$0				$0				$0	**$0**	**0.350**	**$0**
2028				$0				$0				$0	**$0**	**0.331**	**$0**
2029				$0				$0				$0	**$0**	**0.312**	**$0**
2030				$0				$0				$0	**$0**	**0.294**	**$0**
2031				$0				$0				$0	**$0**	**0.278**	**$0**
2032				$0				$0				$0	**$0**	**0.262**	**$0**
2033				$0				$0				$0	**$0**	**0.247**	**$0**
2034				$0				$0				$0	**$0**	**0.233**	**$0**
2035				$0				$0				$0	**$0**	**0.220**	**$0**
2036				$0				$0				$0	**$0**	**0.207**	**$0**
2037				$0				$0				$0	**$0**	**0.196**	**$0**
2038				$0				$0				$0	**$0**	**0.185**	**$0**
2039				$0				$0				$0	**$0**	**0.174**	**$0**
2040				$0				$0				$0	**$0**	**0.164**	**$0**
2041				$0				$0				$0	**$0**	**0.155**	**$0**
2042				$0				$0				$0	**$0**	**0.146**	**$0**
2043				$0				$0				$0	**$0**	**0.138**	**$0**
2044				$0				$0				$0	**$0**	**0.130**	**$0**
2045				$0				$0				$0	**$0**	**0.123**	**$0**
2046				$0				$0				$0	**$0**	**0.116**	**$0**
2047				$0				$0				$0	**$0**	**0.109**	**$0**
2048				$0				$0				$0	**$0**	**0.103**	**$0**
2049				$0				$0				$0	**$0**	**0.097**	**$0**
2050				$0				$0				$0	**$0**	**0.092**	**$0**
2051				$0				$0				$0	**$0**	**0.087**	**$0**
2052				$0				$0				$0	**$0**	**0.082**	**$0**
2053				$0				$0				$0	**$0**	**0.077**	**$0**
2054				$0				$0				$0	**$0**	**0.073**	**$0**
2055				$0				$0				$0	**$0**	**0.069**	**$0**
2056				$0				$0				$0	**$0**	**0.065**	**$0**
2057				$0				$0				$0	**$0**	**0.061**	**$0**
2058				$0				$0				$0	**$0**	**0.058**	**$0**
2059				$0				$0				$0	**$0**	**0.054**	**$0**
2060				$0				$0				$0	**$0**	**0.051**	**$0**
													Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
													Project Allocation:		100.0%
													Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Comments:

Table 7.J.4 - Annual Other Water Supply Benefits (2009 dollars)

Project: San Antonio Spreading Grounds Improvements

(a) Year	*(b) Type of Benefit:* *(C) Description of Benefit:*	*(b) Type of Benefit:* *(C) Description of Benefit:*	*(b) Type of Benefit:* *(C) Description of Benefit:*	*Discounting Calculations for Economic Benefits*		
	(d) Annual Benefit ($)	(d) Annual Benefit ($)	(d) Annual Benefit ($)	(d) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009	$0	$0	$0	$0	1.000	$0
2010	$0	$0	$0	$0	0.943	$0
2011	$0	$0	$0	$0	0.890	$0
2012	$0	$0	$0	$0	0.840	$0
2013	$0	$0	$0	$0	0.792	$0
2014	$0	$0	$0	$0	0.747	$0
2015	$0	$0	$0	$0	0.705	$0
2016	$0	$0	$0	$0	0.665	$0
2017	$0	$0	$0	$0	0.627	$0
2018	$0	$0	$0	$0	0.592	$0
2019	$0	$0	$0	$0	0.558	$0
2020	$0	$0	$0	$0	0.527	$0
2021	$0	$0	$0	$0	0.497	$0
2022	$0	$0	$0	$0	0.469	$0
2023	$0	$0	$0	$0	0.442	$0
2024	$0	$0	$0	$0	0.417	$0
2025	$0	$0	$0	$0	0.390	$0
2026	$0	$0	$0	$0	0.371	$0
2027	$0	$0	$0	$0	0.350	$0
2028	$0	$0	$0	$0	0.331	$0
2029	$0	$0	$0	$0	0.312	$0
2030	$0	$0	$0	$0	0.294	$0
2031	$0	$0	$0	$0	0.278	$0
2032	$0	$0	$0	$0	0.262	$0
2033	$0	$0	$0	$0	0.247	$0
2034	$0	$0	$0	$0	0.233	$0
2035	$0	$0	$0	$0	0.220	$0
2036	$0	$0	$0	$0	0.207	$0
2037	$0	$0	$0	$0	0.196	$0
2038	$0	$0	$0	$0	0.185	$0
2039	$0	$0	$0	$0	0.174	$0
2040	$0	$0	$0	$0	0.164	$0
2041	$0	$0	$0	$0	0.155	$0
2042	$0	$0	$0	$0	0.146	$0
2043	$0	$0	$0	$0	0.138	$0
2044	$0	$0	$0	$0	0.130	$0
2045	$0	$0	$0	$0	0.123	$0
2046	$0	$0	$0	$0	0.116	$0
2047	$0	$0	$0	$0	0.109	$0
2048	$0	$0	$0	$0	0.103	$0
2049	$0	$0	$0	$0	0.097	$0
2050	$0	$0	$0	$0	0.092	$0
2051	$0	$0	$0	$0	0.087	$0
2052	$0	$0	$0	$0	0.082	$0
2053	$0	$0	$0	$0	0.077	$0
2054	$0	$0	$0	$0	0.073	$0
2055	$0	$0	$0	$0	0.069	$0
2056	$0	$0	$0	$0	0.065	$0
2057	$0	$0	$0	$0	0.061	$0
2058	$0	$0	$0	$0	0.058	$0
2059	$0	$0	$0	$0	0.054	$0
2060	$0	$0	$0	$0	0.051	$0

Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):	$0
Project Allocation:	100.0%
Total Present Value of Discounted Benefits (Monetized Benefits):	**$0**

Comments:

Table 7.J.5 - Total Water Supply Benefits (2009 dollars) Project: San Antonio Spreading Grounds Improvements			
(a) Total Discounted Water Supply Benefits	**(b) Total Discounted Avoided Project Costs**	**(c) Other Discounted Water Supply Benefits**	**(d) Total Value of Discounted Benefits [a + c] or [b + c]**
$32,306,146	$0	$0	**$32,306,146**
Comments:			

APPENDIX K

Leo J. Vander Lans Advanced Water Treatment Plant Expansion – Water Replenishment District

Table 7.K.1 - Annual Cost of Project
(All costs should be in 2009 dollars)
Project: Leo J. Vander Lans Advanced Water Treatment Plant Expansion

	Initial Costs	Operations and Maintenance Costs						Discounting Calculations		Original values (in constant 2009 dollars)				
Year	(a) Grand Total Cost from Table 7 (row (i), column (d))	(b) Admin	(c) Operation	(d) Maintenance	(e) Replacement	(f) Other	(g) Total Costs (a)+…+(f)	(h) Discount Factor	(i) Discounted Costs (g) x (h)	(b) Admin	(c) Operation	(d) Maintenance	(e) Replacement	(f) Other
2009		$0	$0	$0	$0	$0	$0	1.00	$0					
2010		$0	$0	$0	$0	$0	$0	0.94	$0					
2011	$1,022,257	$0	$0	$0	$0	$0	$1,022,257	0.89	$909,808					
2012	$14,015,918	$0	$0	$0	$0	$0	$14,015,918	0.84	$11,773,371					
2013	$14,015,918	$0	$0	$0	$0	$0	$14,015,918	0.79	$11,100,607					
2014	$60,506	$50,000	$1,666,900	$427,400	$641,500	$0	$2,846,306	0.75	$2,126,191	$50,000	$1,666,900	$427,400	$641,500	$0
2015		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.71	$1,963,989	$50,000	$1,666,900	$427,400	$641,500	$0
2016		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.67	$1,852,557	$50,000	$1,666,900	$427,400	$641,500	$0
2017		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.63	$1,746,697	$50,000	$1,666,900	$427,400	$641,500	$0
2018		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.59	$1,649,194	$50,000	$1,666,900	$427,400	$641,500	$0
2019		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.56	$1,554,476	$50,000	$1,666,900	$427,400	$641,500	$0
2020		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.53	$1,468,117	$50,000	$1,666,900	$427,400	$641,500	$0
2021		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.50	$1,384,543	$50,000	$1,666,900	$427,400	$641,500	$0
2022		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.47	$1,306,540	$50,000	$1,666,900	$427,400	$641,500	$0
2023		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.44	$1,231,324	$50,000	$1,666,900	$427,400	$641,500	$0
2024		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.42	$1,161,679	$50,000	$1,666,900	$427,400	$641,500	$0
2025		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.39	$1,086,462	$50,000	$1,666,900	$427,400	$641,500	$0
2026		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.37	$1,033,532	$50,000	$1,666,900	$427,400	$641,500	$0
2027		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.35	$975,030	$50,000	$1,666,900	$427,400	$641,500	$0
2028		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.33	$922,100	$50,000	$1,666,900	$427,400	$641,500	$0
2029		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.31	$869,170	$50,000	$1,666,900	$427,400	$641,500	$0
2030		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.29	$819,025	$50,000	$1,666,900	$427,400	$641,500	$0
2031		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.28	$774,452	$50,000	$1,666,900	$427,400	$641,500	$0
2032		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.26	$729,880	$50,000	$1,666,900	$427,400	$641,500	$0
2033		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.25	$688,093	$50,000	$1,666,900	$427,400	$641,500	$0
2034		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.23	$649,091	$50,000	$1,666,900	$427,400	$641,500	$0
2035		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.22	$612,876	$50,000	$1,666,900	$427,400	$641,500	$0
2036		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.21	$576,661	$50,000	$1,666,900	$427,400	$641,500	$0
2037		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.20	$546,017	$50,000	$1,666,900	$427,400	$641,500	$0
2038		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.19	$515,373	$50,000	$1,666,900	$427,400	$641,500	$0
2039		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.17	$484,729	$50,000	$1,666,900	$427,400	$641,500	$0
2040		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.16	$456,871	$50,000	$1,666,900	$427,400	$641,500	$0
2041		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.16	$431,799	$50,000	$1,666,900	$427,400	$641,500	$0
2042		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.15	$406,727	$50,000	$1,666,900	$427,400	$641,500	$0
2043		$50,000	$1,666,900	$427,400	$641,500	$0	$2,785,800	0.14	$384,440	$50,000	$1,666,900	$427,400	$641,500	$0
2044														
2045														
2046														
2047														
2048														
2049														
2050														
2051														
2052														
2053														
2054														
2055														
2056														
2057														
2058														
2059														
2060														

Project Life		
	Total Present Value of Discounted Costs (Sum of Column (i))	
	Transfer to Table 20, Column (c), Exhibit F: Proposal Costs and Benefit Summaries	$54,191,419

Comments: Based on operations records. Thirty year project life. Project construction will start 3/15/2012 and end 12/31/2013.

Table 7.K.2 - Annual Water Supply Benefits (2009 dollars)

Project: Leo J. Vander Lans Advanced Water Treatment Plant Expansion

	(b) Type of Benefit: Avoided Cost of Imported Water (C) Measure of Benefit [Unit]: AF per year					(b) Type of Benefit: (C) Measure of Benefit [Unit]:					(b) Type of Benefit: (C) Measure of Benefit [Unit]:					Discounting Calculations for Economic Benefits		
(a) Year	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(h) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009	0	0	0	$0	$0			0		$0			0		$0	**$0**	**1.000**	**$0**
2010	0	0	0	$0	$0			0		$0			0		$0	**$0**	**0.943**	**$0**
2011	0	0	0	$0	$0			0		$0			0		$0	**$0**	**0.890**	**$0**
2012	0	0	0	$0	$0			0		$0			0		$0	**$0**	**0.840**	**$0**
2013	0	0	0	$0	$0			0		$0			0		$0	**$0**	**0.792**	**$0**
2014	-4,000	0	4,000	$826	$3,304,000			0		$0			0		$0	**$3,304,000**	**0.747**	**$2,468,088**
2015	-4,000	0	4,000	$856	$3,424,000			0		$0			0		$0	**$3,424,000**	**0.705**	**$2,413,920**
2016	-4,000	0	4,000	$887	$3,548,000			0		$0			0		$0	**$3,548,000**	**0.665**	**$2,359,420**
2017	-4,000	0	4,000	$919	$3,676,000			0		$0			0		$0	**$3,676,000**	**0.627**	**$2,304,852**
2018	-4,000	0	4,000	$952	$3,808,000			0		$0			0		$0	**$3,808,000**	**0.592**	**$2,254,336**
2019	-4,000	0	4,000	$987	$3,948,000			0		$0			0		$0	**$3,948,000**	**0.558**	**$2,202,984**
2020	-4,000	0	4,000	$1,023	$4,092,000			0		$0			0		$0	**$4,092,000**	**0.527**	**$2,156,484**
2021	-4,000	0	4,000	$1,032	$4,128,000			0		$0			0		$0	**$4,128,000**	**0.497**	**$2,051,616**
2022	-4,000	0	4,000	$1,043	$4,172,000			0		$0			0		$0	**$4,172,000**	**0.469**	**$1,956,668**
2023	-4,000	0	4,000	$1,053	$4,212,000			0		$0			0		$0	**$4,212,000**	**0.442**	**$1,861,704**
2024	-4,000	0	4,000	$1,063	$4,252,000			0		$0			0		$0	**$4,252,000**	**0.417**	**$1,773,084**
2025	-4,000	0	4,000	$1,073	$4,292,000			0		$0			0		$0	**$4,292,000**	**0.390**	**$1,673,880**
2026	-4,000	0	4,000	$1,084	$4,336,000			0		$0			0		$0	**$4,336,000**	**0.371**	**$1,608,656**
2027	-4,000	0	4,000	$1,095	$4,380,000			0		$0			0		$0	**$4,380,000**	**0.350**	**$1,533,000**
2028	-4,000	0	4,000	$1,105	$4,420,000			0		$0			0		$0	**$4,420,000**	**0.331**	**$1,463,020**
2029	-4,000	0	4,000	$1,116	$4,464,000			0		$0			0		$0	**$4,464,000**	**0.312**	**$1,392,768**
2030	-4,000	0	4,000	$1,127	$4,508,000			0		$0			0		$0	**$4,508,000**	**0.294**	**$1,325,352**
2031	-4,000	0	4,000	$1,138	$4,552,000			0		$0			0		$0	**$4,552,000**	**0.278**	**$1,265,456**
2032	-4,000	0	4,000	$1,149	$4,596,000			0		$0			0		$0	**$4,596,000**	**0.262**	**$1,204,152**
2033	-4,000	0	4,000	$1,161	$4,644,000			0		$0			0		$0	**$4,644,000**	**0.247**	**$1,147,068**
2034	-4,000	0	4,000	$1,172	$4,688,000			0		$0			0		$0	**$4,688,000**	**0.233**	**$1,092,304**
2035	-4,000	0	4,000	$1,184	$4,736,000			0		$0			0		$0	**$4,736,000**	**0.220**	**$1,041,920**
2036	-4,000	0	4,000	$1,195	$4,780,000			0		$0			0		$0	**$4,780,000**	**0.207**	**$989,460**
2037	-4,000	0	4,000	$1,207	$4,828,000			0		$0			0		$0	**$4,828,000**	**0.196**	**$946,288**
2038	-4,000	0	4,000	$1,219	$4,876,000			0		$0			0		$0	**$4,876,000**	**0.185**	**$902,060**
2039	-4,000	0	4,000	$1,231	$4,924,000			0		$0			0		$0	**$4,924,000**	**0.174**	**$856,776**
2040	-4,000	0	4,000	$1,243	$4,972,000			0		$0			0		$0	**$4,972,000**	**0.164**	**$815,408**
2041	-4,000	0	4,000	$1,255	$5,020,000			0		$0			0		$0	**$5,020,000**	**0.155**	**$778,100**
2042	-4,000	0	4,000	$1,267	$5,068,000			0		$0			0		$0	**$5,068,000**	**0.146**	**$739,928**
2043	-4,000	0	4,000	$1,280	$5,120,000			0		$0			0		$0	**$5,120,000**	**0.138**	**$706,560**
2044								0		$0			0		$0	**$0**	**0.130**	**$0**
2045								0		$0			0		$0	**$0**	**0.123**	**$0**
2046								0		$0			0		$0	**$0**	**0.116**	**$0**
2047								0		$0			0		$0	**$0**	**0.109**	**$0**
2048								0		$0			0		$0	**$0**	**0.103**	**$0**
2049								0		$0			0		$0	**$0**	**0.097**	**$0**
2050								0		$0			0		$0	**$0**	**0.092**	**$0**
2051								0		$0			0		$0	**$0**	**0.087**	**$0**
2052								0		$0			0		$0	**$0**	**0.082**	**$0**
2053								0		$0			0		$0	**$0**	**0.077**	**$0**
2054								0		$0			0		$0	**$0**	**0.073**	**$0**
2055								0		$0			0		$0	**$0**	**0.069**	**$0**
2056								0		$0			0		$0	**$0**	**0.065**	**$0**
2057								0		$0			0		$0	**$0**	**0.061**	**$0**
2058								0		$0			0		$0	**$0**	**0.058**	**$0**
2059								0		$0			0		$0	**$0**	**0.054**	**$0**
2060								0		$0			0		$0	**$0**	**0.051**	**$0**
																	Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):	$45,285,312
																	Project Allocation:	100.0%
																	Total Present Value of Discounted Benefits (Monetized Benefits):	**$45,285,312**

Table 7.K.3 - Annual Costs of Avoided Projects (2009 dollars)

Project: Leo J. Vander Lans Advanced Water Treatment Plant Expansion

	Alternative (Avoided Project Name): Avoided Project Description:				Alternative (Avoided Project Name): Avoided Project Description:				Alternative (Avoided Project Name): Avoided Project Description:				Discounting Calculations for Economic Benefits		
(a) Year	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(e) Total Avoided Costs for All Alts ($)	(f) Discount Value	(g) Discounted Benefits [e x f]
2009				$0				$0				$0	**$0**	**1.000**	**$0**
2010				$0				$0				$0	**$0**	**0.943**	**$0**
2011				$0				$0				$0	**$0**	**0.890**	**$0**
2012				$0				$0				$0	**$0**	**0.840**	**$0**
2013				$0				$0				$0	**$0**	**0.792**	**$0**
2014				$0				$0				$0	**$0**	**0.747**	**$0**
2015				$0				$0				$0	**$0**	**0.705**	**$0**
2016				$0				$0				$0	**$0**	**0.665**	**$0**
2017				$0				$0				$0	**$0**	**0.627**	**$0**
2018				$0				$0				$0	**$0**	**0.592**	**$0**
2019				$0				$0				$0	**$0**	**0.558**	**$0**
2020				$0				$0				$0	**$0**	**0.527**	**$0**
2021				$0				$0				$0	**$0**	**0.497**	**$0**
2022				$0				$0				$0	**$0**	**0.469**	**$0**
2023				$0				$0				$0	**$0**	**0.442**	**$0**
2024				$0				$0				$0	**$0**	**0.417**	**$0**
2025				$0				$0				$0	**$0**	**0.390**	**$0**
2026				$0				$0				$0	**$0**	**0.371**	**$0**
2027				$0				$0				$0	**$0**	**0.350**	**$0**
2028				$0				$0				$0	**$0**	**0.331**	**$0**
2029				$0				$0				$0	**$0**	**0.312**	**$0**
2030				$0				$0				$0	**$0**	**0.294**	**$0**
2031				$0				$0				$0	**$0**	**0.278**	**$0**
2032				$0				$0				$0	**$0**	**0.262**	**$0**
2033				$0				$0				$0	**$0**	**0.247**	**$0**
2034				$0				$0				$0	**$0**	**0.233**	**$0**
2035				$0				$0				$0	**$0**	**0.220**	**$0**
2036				$0				$0				$0	**$0**	**0.207**	**$0**
2037				$0				$0				$0	**$0**	**0.196**	**$0**
2038				$0				$0				$0	**$0**	**0.185**	**$0**
2039				$0				$0				$0	**$0**	**0.174**	**$0**
2040				$0				$0				$0	**$0**	**0.164**	**$0**
2041				$0				$0				$0	**$0**	**0.155**	**$0**
2042				$0				$0				$0	**$0**	**0.146**	**$0**
2043				$0				$0				$0	**$0**	**0.138**	**$0**
2044				$0				$0				$0	**$0**	**0.130**	**$0**
2045				$0				$0				$0	**$0**	**0.123**	**$0**
2046				$0				$0				$0	**$0**	**0.116**	**$0**
2047				$0				$0				$0	**$0**	**0.109**	**$0**
2048				$0				$0				$0	**$0**	**0.103**	**$0**
2049				$0				$0				$0	**$0**	**0.097**	**$0**
2050				$0				$0				$0	**$0**	**0.092**	**$0**
2051				$0				$0				$0	**$0**	**0.087**	**$0**
2052				$0				$0				$0	**$0**	**0.082**	**$0**
2053				$0				$0				$0	**$0**	**0.077**	**$0**
2054				$0				$0				$0	**$0**	**0.073**	**$0**
2055				$0				$0				$0	**$0**	**0.069**	**$0**
2056				$0				$0				$0	**$0**	**0.065**	**$0**
2057				$0				$0				$0	**$0**	**0.061**	**$0**
2058				$0				$0				$0	**$0**	**0.058**	**$0**
2059				$0				$0				$0	**$0**	**0.054**	**$0**
2060				$0				$0				$0	**$0**	**0.051**	**$0**
													Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
													Project Allocation:		100.0%
													Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Table 7.K.4 - Annual Other Water Supply Benefits (2009 dollars)

Project: Leo J. Vander Lans Advanced Water Treatment Plant Expansion

(a) Year	(b) Type of Benefit: (C) Description of Benefit: (d) Annual Benefit ($)	(b) Type of Benefit: (C) Description of Benefit: (d) Annual Benefit ($)	(b) Type of Benefit: (C) Description of Benefit: (d) Annual Benefit ($)	Discounting Calculations for Economic Benefits (d) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009	$0	$0	$0	**$0**	**1.000**	**$0**
2010	$0	$0	$0	**$0**	**0.943**	**$0**
2011	$0	$0	$0	**$0**	**0.890**	**$0**
2012	$0	$0	$0	**$0**	**0.840**	**$0**
2013	$0	$0	$0	**$0**	**0.792**	**$0**
2014	$0	$0	$0	**$0**	**0.747**	**$0**
2015	$0	$0	$0	**$0**	**0.705**	**$0**
2016	$0	$0	$0	**$0**	**0.665**	**$0**
2017	$0	$0	$0	**$0**	**0.627**	**$0**
2018	$0	$0	$0	**$0**	**0.592**	**$0**
2019	$0	$0	$0	**$0**	**0.558**	**$0**
2020	$0	$0	$0	**$0**	**0.527**	**$0**
2021	$0	$0	$0	**$0**	**0.497**	**$0**
2022	$0	$0	$0	**$0**	**0.469**	**$0**
2023	$0	$0	$0	**$0**	**0.442**	**$0**
2024	$0	$0	$0	**$0**	**0.417**	**$0**
2025	$0	$0	$0	**$0**	**0.390**	**$0**
2026	$0	$0	$0	**$0**	**0.371**	**$0**
2027	$0	$0	$0	**$0**	**0.350**	**$0**
2028	$0	$0	$0	**$0**	**0.331**	**$0**
2029	$0	$0	$0	**$0**	**0.312**	**$0**
2030	$0	$0	$0	**$0**	**0.294**	**$0**
2031	$0	$0	$0	**$0**	**0.278**	**$0**
2032	$0	$0	$0	**$0**	**0.262**	**$0**
2033	$0	$0	$0	**$0**	**0.247**	**$0**
2034	$0	$0	$0	**$0**	**0.233**	**$0**
2035	$0	$0	$0	**$0**	**0.220**	**$0**
2036	$0	$0	$0	**$0**	**0.207**	**$0**
2037	$0	$0	$0	**$0**	**0.196**	**$0**
2038	$0	$0	$0	**$0**	**0.185**	**$0**
2039	$0	$0	$0	**$0**	**0.174**	**$0**
2040	$0	$0	$0	**$0**	**0.164**	**$0**
2041	$0	$0	$0	**$0**	**0.155**	**$0**
2042	$0	$0	$0	**$0**	**0.146**	**$0**
2043	$0	$0	$0	**$0**	**0.138**	**$0**
2044	$0	$0	$0	**$0**	**0.130**	**$0**
2045	$0	$0	$0	**$0**	**0.123**	**$0**
2046	$0	$0	$0	**$0**	**0.116**	**$0**
2047	$0	$0	$0	**$0**	**0.109**	**$0**
2048	$0	$0	$0	**$0**	**0.103**	**$0**
2049	$0	$0	$0	**$0**	**0.097**	**$0**
2050	$0	$0	$0	**$0**	**0.092**	**$0**
2051	$0	$0	$0	**$0**	**0.087**	**$0**
2052	$0	$0	$0	**$0**	**0.082**	**$0**
2053	$0	$0	$0	**$0**	**0.077**	**$0**
2054	$0	$0	$0	**$0**	**0.073**	**$0**
2055	$0	$0	$0	**$0**	**0.069**	**$0**
2056	$0	$0	$0	**$0**	**0.065**	**$0**
2057	$0	$0	$0	**$0**	**0.061**	**$0**
2058	$0	$0	$0	**$0**	**0.058**	**$0**
2059	$0	$0	$0	**$0**	**0.054**	**$0**
2060	$0	$0	$0	**$0**	**0.051**	**$0**
				Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
				Project Allocation:		100.0%
				Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Table 7.K.5 - Total Water Supply Benefits (2009 dollars)			
Project: Leo J. Vander Lans Advanced Water Treatment Plant Expansion			
(a) Total Discounted Water Supply Benefits	**(b) Total Discounted Avoided Project Costs**	**(c) Other Discounted Water Supply Benefits**	**(d) Total Value of Discounted Benefits [a + c] or [b + c]**
$45,285,312	$0	$0	**$45,285,312**
Comments:			

APPENDIX L

Whittier Narrows Conservation Pool Project

Table 7.L.1 - Annual Cost of Project

(All costs should be in 2009 dollars)

Project: **Whittier Narrows Conservation Pool Project**

Year	Initial Costs	Operations and Maintenance Costs						Discounting Calculations	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	Grand Total Cost from Table 7 (row (i), column (d))	Admin	Operation	Maintenance	Replacement	Other	Total Costs (a)+…+(f)	Discount Factor	Discounted Costs (g) x (h)
2009							$ -	1.000	$ -
2010							$ -	0.943	$ -
2011	$ 562,968						$ 562,968	0.890	$ 501,042
2012	$ 562,968						$ 562,968	0.840	$ 472,893
2013	$ 562,968						$ 562,968	0.792	$ 445,871
2014	$ 12,600						$ 12,600	0.747	$ 9,412
2015			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.705	$ 181,326
2016			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.665	$ 171,038
2017			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.627	$ 161,264
2018			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.592	$ 152,262
2019			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.558	$ 143,518
2020			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.527	$ 135,544
2021			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.497	$ 127,828
2022			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.469	$ 120,627
2023			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.442	$ 113,682
2024			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.417	$ 107,252
2025			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.390	$ 100,308
2026			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.371	$ 95,421
2027			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.350	$ 90,020
2028			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.331	$ 85,133
2029			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.312	$ 80,246
2030			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.294	$ 75,617
2031			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.278	$ 71,502
2032			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.262	$ 67,386
2033			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.247	$ 63,528
2034			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.233	$ 59,928
2035			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.220	$ 56,584
2036			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.207	$ 53,240
2037			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.196	$ 50,411
2038			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.185	$ 47,582
2039			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.174	$ 44,753
2040			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.164	$ 42,181
2041			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.155	$ 39,866
2042			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.146	$ 37,551
2043			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.138	$ 35,494
2044			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.130	$ 33,436
2045			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.123	$ 31,636
2046			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.116	$ 29,835
2047			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.109	$ 28,035
2048			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.103	$ 26,492
2049			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.097	$ 24,948
2050			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.092	$ 23,662
2051			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.087	$ 22,376
2052			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.082	$ 21,090
2053			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.077	$ 19,804
2054			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.073	$ 18,776
2055			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.069	$ 17,747
2056			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.065	$ 16,718
2057			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.061	$ 15,689
2058			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.058	$ 14,918
2059			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.054	$ 13,963
2060			$ 16,410	$ 125,000	$ -	$ 115,790	$ 257,200	0.051	$ 13,173
Project Life								Total Present Value of Discounted Costs (Sum of Column (i))	
								Transfer to Table 20, Column (c), Exhibit F: Proposal Costs and Benefit Summaries	**$ 4,412,611**

Comments: *Based on economic analysis in preliminary impact study (2009). Operation cost includes dam tender when water is held behind dam, and additional operational costs at reclamation plant during storm events. Maintenance cost includes clean-up costs for inundation area. Other costs include recreational costs (loss of use) and environmental mitigation (biological mitigation and monitoring, wildlife monitoring).*

Table 7.L.2 - Annual Water Supply Benefits (2009 dollars)

Project: Whittier Narrows Conservation Pool Project

(a) Year	*(b) Type of Benefit: Avoided Cost of Purchasing Imported Water (C) Measure of Benefit [Unit]: AF per year*					*(b) Type of Benefit: (C) Measure of Benefit [Unit]:*					*(b) Type of Benefit: (C) Measure of Benefit [Unit]:*					*Discounting Calculations for Economic Benefits*		
	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(h) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009			0		$0			0		$0			0		$0	**$0**	**1.000**	**$0**
2010			0		$0			0		$0			0		$0	**$0**	**0.943**	**$0**
2011			0		$0			0		$0			0		$0	**$0**	**0.890**	**$0**
2012			0		$0			0		$0			0		$0	**$0**	**0.840**	**$0**
2013			0		$0			0		$0			0		$0	**$0**	**0.792**	**$0**
2014			0		$0			0		$0			0		$0	**$0**	**0.747**	**$0**
2015	-1,100	0	1,100	$477	$524,700			0		$0			0		$0	**$524,700**	**0.705**	**$369,914**
2016	-1,100	0	1,100	$494	$543,400			0		$0			0		$0	**$543,400**	**0.665**	**$361,361**
2017	-1,100	0	1,100	$512	$563,200			0		$0			0		$0	**$563,200**	**0.627**	**$353,126**
2018	-1,100	0	1,100	$530	$583,000			0		$0			0		$0	**$583,000**	**0.592**	**$345,136**
2019	-1,100	0	1,100	$550	$605,000			0		$0			0		$0	**$605,000**	**0.558**	**$337,590**
2020	-1,100	0	1,100	$569	$625,900			0		$0			0		$0	**$625,900**	**0.527**	**$329,849**
2021	-1,100	0	1,100	$575	$632,500			0		$0			0		$0	**$632,500**	**0.497**	**$314,353**
2022	-1,100	0	1,100	$581	$639,100			0		$0			0		$0	**$639,100**	**0.469**	**$299,738**
2023	-1,100	0	1,100	$586	$644,600			0		$0			0		$0	**$644,600**	**0.442**	**$284,913**
2024	-1,100	0	1,100	$592	$651,200			0		$0			0		$0	**$651,200**	**0.417**	**$271,550**
2025	-1,100	0	1,100	$598	$657,800			0		$0			0		$0	**$657,800**	**0.390**	**$256,542**
2026	-1,100	0	1,100	$604	$664,400			0		$0			0		$0	**$664,400**	**0.371**	**$246,492**
2027	-1,100	0	1,100	$610	$671,000			0		$0			0		$0	**$671,000**	**0.350**	**$234,850**
2028	-1,100	0	1,100	$615	$676,500			0		$0			0		$0	**$676,500**	**0.331**	**$223,922**
2029	-1,100	0	1,100	$621	$683,100			0		$0			0		$0	**$683,100**	**0.312**	**$213,127**
2030	-1,100	0	1,100	$628	$690,800			0		$0			0		$0	**$690,800**	**0.294**	**$203,095**
2031	-1,100	0	1,100	$634	$697,400			0		$0			0		$0	**$697,400**	**0.278**	**$193,877**
2032	-1,100	0	1,100	$640	$704,000			0		$0			0		$0	**$704,000**	**0.262**	**$184,448**
2033	-1,100	0	1,100	$646	$710,600			0		$0			0		$0	**$710,600**	**0.247**	**$175,518**
2034	-1,100	0	1,100	$653	$718,300			0		$0			0		$0	**$718,300**	**0.233**	**$167,364**
2035	-1,100	0	1,100	$659	$724,900			0		$0			0		$0	**$724,900**	**0.220**	**$159,478**
2036	-1,100	0	1,100	$666	$732,600			0		$0			0		$0	**$732,600**	**0.207**	**$151,648**
2037	-1,100	0	1,100	$672	$739,200			0		$0			0		$0	**$739,200**	**0.196**	**$144,883**
2038	-1,100	0	1,100	$679	$746,900			0		$0			0		$0	**$746,900**	**0.185**	**$138,177**
2039	-1,100	0	1,100	$685	$753,500			0		$0			0		$0	**$753,500**	**0.174**	**$131,109**
2040	-1,100	0	1,100	$692	$761,200			0		$0			0		$0	**$761,200**	**0.164**	**$124,837**
2041	-1,100	0	1,100	$699	$768,900			0		$0			0		$0	**$768,900**	**0.155**	**$119,180**
2042	-1,100	0	1,100	$706	$776,600			0		$0			0		$0	**$776,600**	**0.146**	**$113,384**
2043	-1,100	0	1,100	$713	$784,300			0		$0			0		$0	**$784,300**	**0.138**	**$108,233**
2044	-1,100	0	1,100	$720	$792,000			0		$0			0		$0	**$792,000**	**0.130**	**$102,960**
2045	-1,100	0	1,100	$726	$798,600			0		$0			0		$0	**$798,600**	**0.123**	**$98,228**
2046	-1,100	0	1,100	$734	$807,400			0		$0			0		$0	**$807,400**	**0.116**	**$93,658**
2047	-1,100	0	1,100	$741	$815,100			0		$0			0		$0	**$815,100**	**0.109**	**$88,846**
2048	-1,100	0	1,100	$748	$822,800			0		$0			0		$0	**$822,800**	**0.103**	**$84,748**
2049	-1,100	0	1,100	$756	$831,600			0		$0			0		$0	**$831,600**	**0.097**	**$80,665**
2050	-1,100	0	1,100	$763	$839,300			0		$0			0		$0	**$839,300**	**0.092**	**$77,216**
2051	-1,100	0	1,100	$770	$847,000			0		$0			0		$0	**$847,000**	**0.087**	**$73,689**
2052	-1,100	0	1,100	$778	$855,800			0		$0			0		$0	**$855,800**	**0.082**	**$70,176**
2053	-1,100	0	1,100	$786	$864,600			0		$0			0		$0	**$864,600**	**0.077**	**$66,574**
2054	-1,100	0	1,100	$793	$872,300			0		$0			0		$0	**$872,300**	**0.073**	**$63,678**
2055	-1,100	0	1,100	$801	$881,100			0		$0			0		$0	**$881,100**	**0.069**	**$60,796**
2056	-1,100	0	1,100	$809	$889,900			0		$0			0		$0	**$889,900**	**0.065**	**$57,844**
2057	-1,100	0	1,100	$817	$898,700			0		$0			0		$0	**$898,700**	**0.061**	**$54,821**
2058	-1,100	0	1,100	$825	$907,500			0		$0			0		$0	**$907,500**	**0.058**	**$52,635**
2059	-1,100	0	1,100	$833	$916,300			0		$0			0		$0	**$916,300**	**0.054**	**$49,744**
2060	-1,100	0	1,100	$841	$925,100			0		$0			0		$0	**$925,100**	**0.051**	**$47,379**
																Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$7,781,351
																	Project Allocation:	100.0%
																	Total Present Value of Discounted Benefits (Monetized Benefits):	**$7,781,351**

Table 7.L.3 - Annual Costs of Avoided Projects (2009 dollars)

Project: Whittier Narrows Conservation Pool Project

(a) Year	*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Discounting Calculations for Economic Benefits*		
	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(e) Total Avoided Costs for All Alts ($)	(f) Discount Value	(g) Discounted Benefits [e x f]
2009				$0				$0				$0	**$0**	**1.000**	**$0**
2010				$0				$0				$0	**$0**	**0.943**	**$0**
2011				$0				$0				$0	**$0**	**0.890**	**$0**
2012				$0				$0				$0	**$0**	**0.840**	**$0**
2013				$0				$0				$0	**$0**	**0.792**	**$0**
2014				$0				$0				$0	**$0**	**0.747**	**$0**
2015				$0				$0				$0	**$0**	**0.705**	**$0**
2016				$0				$0				$0	**$0**	**0.665**	**$0**
2017				$0				$0				$0	**$0**	**0.627**	**$0**
2018				$0				$0				$0	**$0**	**0.592**	**$0**
2019				$0				$0				$0	**$0**	**0.558**	**$0**
2020				$0				$0				$0	**$0**	**0.527**	**$0**
2021				$0				$0				$0	**$0**	**0.497**	**$0**
2022				$0				$0				$0	**$0**	**0.469**	**$0**
2023				$0				$0				$0	**$0**	**0.442**	**$0**
2024				$0				$0				$0	**$0**	**0.417**	**$0**
2025				$0				$0				$0	**$0**	**0.390**	**$0**
2026				$0				$0				$0	**$0**	**0.371**	**$0**
2027				$0				$0				$0	**$0**	**0.350**	**$0**
2028				$0				$0				$0	**$0**	**0.331**	**$0**
2029				$0				$0				$0	**$0**	**0.312**	**$0**
2030				$0				$0				$0	**$0**	**0.294**	**$0**
2031				$0				$0				$0	**$0**	**0.278**	**$0**
2032				$0				$0				$0	**$0**	**0.262**	**$0**
2033				$0				$0				$0	**$0**	**0.247**	**$0**
2034				$0				$0				$0	**$0**	**0.233**	**$0**
2035				$0				$0				$0	**$0**	**0.220**	**$0**
2036				$0				$0				$0	**$0**	**0.207**	**$0**
2037				$0				$0				$0	**$0**	**0.196**	**$0**
2038				$0				$0				$0	**$0**	**0.185**	**$0**
2039				$0				$0				$0	**$0**	**0.174**	**$0**
2040				$0				$0				$0	**$0**	**0.164**	**$0**
2041				$0				$0				$0	**$0**	**0.155**	**$0**
2042				$0				$0				$0	**$0**	**0.146**	**$0**
2043				$0				$0				$0	**$0**	**0.138**	**$0**
2044				$0				$0				$0	**$0**	**0.130**	**$0**
2045				$0				$0				$0	**$0**	**0.123**	**$0**
2046				$0				$0				$0	**$0**	**0.116**	**$0**
2047				$0				$0				$0	**$0**	**0.109**	**$0**
2048				$0				$0				$0	**$0**	**0.103**	**$0**
2049				$0				$0				$0	**$0**	**0.097**	**$0**
2050				$0				$0				$0	**$0**	**0.092**	**$0**
2051				$0				$0				$0	**$0**	**0.087**	**$0**
2052				$0				$0				$0	**$0**	**0.082**	**$0**
2053				$0				$0				$0	**$0**	**0.077**	**$0**
2054				$0				$0				$0	**$0**	**0.073**	**$0**
2055				$0				$0				$0	**$0**	**0.069**	**$0**
2056				$0				$0				$0	**$0**	**0.065**	**$0**
2057				$0				$0				$0	**$0**	**0.061**	**$0**
2058				$0				$0				$0	**$0**	**0.058**	**$0**
2059				$0				$0				$0	**$0**	**0.054**	**$0**
2060				$0				$0				$0	**$0**	**0.051**	**$0**
													Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
													Project Allocation:		100.0%
													Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Table 7.L.4 - Annual Other Water Supply Benefits (2009 dollars)

Project: Whittier Narrows Conservation Pool Project

(a) Year	*(b) Type of Benefit:* *(C) Description of Benefit:* (d) Annual Benefit ($)	*(b) Type of Benefit:* *(C) Description of Benefit:* (d) Annual Benefit ($)	*(b) Type of Benefit:* *(C) Description of Benefit:* (d) Annual Benefit ($)	*Discounting Calculations for Economic Benefits* (d) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009	$0	$0	$0	**$0**	**1.000**	**$0**
2010	$0	$0	$0	**$0**	**0.943**	**$0**
2011	$0	$0	$0	**$0**	**0.890**	**$0**
2012	$0	$0	$0	**$0**	**0.840**	**$0**
2013	$0	$0	$0	**$0**	**0.792**	**$0**
2014	$0	$0	$0	**$0**	**0.747**	**$0**
2015	$0	$0	$0	**$0**	**0.705**	**$0**
2016	$0	$0	$0	**$0**	**0.665**	**$0**
2017	$0	$0	$0	**$0**	**0.627**	**$0**
2018	$0	$0	$0	**$0**	**0.592**	**$0**
2019	$0	$0	$0	**$0**	**0.558**	**$0**
2020	$0	$0	$0	**$0**	**0.527**	**$0**
2021	$0	$0	$0	**$0**	**0.497**	**$0**
2022	$0	$0	$0	**$0**	**0.469**	**$0**
2023	$0	$0	$0	**$0**	**0.442**	**$0**
2024	$0	$0	$0	**$0**	**0.417**	**$0**
2025	$0	$0	$0	**$0**	**0.390**	**$0**
2026	$0	$0	$0	**$0**	**0.371**	**$0**
2027	$0	$0	$0	**$0**	**0.350**	**$0**
2028	$0	$0	$0	**$0**	**0.331**	**$0**
2029	$0	$0	$0	**$0**	**0.312**	**$0**
2030	$0	$0	$0	**$0**	**0.294**	**$0**
2031	$0	$0	$0	**$0**	**0.278**	**$0**
2032	$0	$0	$0	**$0**	**0.262**	**$0**
2033	$0	$0	$0	**$0**	**0.247**	**$0**
2034	$0	$0	$0	**$0**	**0.233**	**$0**
2035	$0	$0	$0	**$0**	**0.220**	**$0**
2036	$0	$0	$0	**$0**	**0.207**	**$0**
2037	$0	$0	$0	**$0**	**0.196**	**$0**
2038	$0	$0	$0	**$0**	**0.185**	**$0**
2039	$0	$0	$0	**$0**	**0.174**	**$0**
2040	$0	$0	$0	**$0**	**0.164**	**$0**
2041	$0	$0	$0	**$0**	**0.155**	**$0**
2042	$0	$0	$0	**$0**	**0.146**	**$0**
2043	$0	$0	$0	**$0**	**0.138**	**$0**
2044	$0	$0	$0	**$0**	**0.130**	**$0**
2045	$0	$0	$0	**$0**	**0.123**	**$0**
2046	$0	$0	$0	**$0**	**0.116**	**$0**
2047	$0	$0	$0	**$0**	**0.109**	**$0**
2048	$0	$0	$0	**$0**	**0.103**	**$0**
2049	$0	$0	$0	**$0**	**0.097**	**$0**
2050	$0	$0	$0	**$0**	**0.092**	**$0**
2051	$0	$0	$0	**$0**	**0.087**	**$0**
2052	$0	$0	$0	**$0**	**0.082**	**$0**
2053	$0	$0	$0	**$0**	**0.077**	**$0**
2054	$0	$0	$0	**$0**	**0.073**	**$0**
2055	$0	$0	$0	**$0**	**0.069**	**$0**
2056	$0	$0	$0	**$0**	**0.065**	**$0**
2057	$0	$0	$0	**$0**	**0.061**	**$0**
2058	$0	$0	$0	**$0**	**0.058**	**$0**
2059	$0	$0	$0	**$0**	**0.054**	**$0**
2060	$0	$0	$0	**$0**	**0.051**	**$0**
				Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
				Project Allocation:		100.0%
				Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Table 7.L.5 - Total Water Supply Benefits (2009 dollars) Project: Whittier Narrows Conservation Pool Project			
(a) Total Discounted Water Supply Benefits	**(b) Total Discounted Avoided Project Costs**	**(c) Other Discounted Water Supply Benefits**	**(d) Total Value of Discounted Benefits [a + c] or [b + c]**
$7,781,351	$0	$0	**$7,781,351**
Comments:			

APPENDIX M

Water and Energy Efficiency in the School and Hotel/Motel Sectors – West Basin Municipal Water District

Table 7.M.1 - Annual Cost of Project
(All costs should be in 2009 dollars)
Project: Water and Energy Efficient in the School and Hotel/Motel Sectors

Year	Initial Costs	Operations and Maintenance Costs						Discounting Calculations	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	Grand Total Cost from Table 7 (row (i), column (d))	Admin	Operation	Maintenance	Replacement	Other	Total Costs (a)+…+(f)	Discount Factor	Discounted Costs (g) x (h)
2009	$0	$0	$0	$0	$0	$0	$0	1.000	$0
2010	$0	$0	$0	$0	$0	$0	$0	0.943	$0
2011	$188,033	$0	$0	$0	$0	$0	$188,033	0.890	$167,349
2012	$188,033	$0	$0	$0	$0	$0	$188,033	0.840	$157,876
2013	$188,033	$0	$0	$0	$0	$0	$188,033	0.792	$148,940
2014	$2,000	$0	$0	$0	$0	$0	$2,000	0.747	$1,495
2015		$0	$0	$0	$0	$0	$0	0.705	$0
2016		$0	$0	$0	$0	$0	$0	0.665	$0
2017		$0	$0	$0	$0	$0	$0	0.627	$0
2018		$0	$0	$0	$0	$0	$0	0.592	$0
2019		$0	$0	$0	$0	$0	$0	0.558	$0
2020		$0	$0	$0	$0	$0	$0	0.527	$0
2021		$0	$0	$0	$0	$0	$0	0.497	$0
2022		$0	$0	$0	$0	$0	$0	0.469	$0
2023		$0	$0	$0	$0	$0	$0	0.442	$0
2024		$0	$0	$0	$0	$0	$0	0.417	$0
2025		$0	$0	$0	$0	$0	$0	0.394	$0
2026		$0	$0	$0	$0	$0	$0	0.371	$0
2027		$0	$0	$0	$0	$0	$0	0.350	$0
2028		$0	$0	$0	$0	$0	$0	0.331	$0
2029		$0	$0	$0	$0	$0	$0	0.312	$0
2030		$0	$0	$0	$0	$0	$0	0.294	$0
2031		$0	$0	$0	$0	$0	$0	0.278	$0
2032		$0	$0	$0	$0	$0	$0	0.262	$0
2033		$0	$0	$0	$0	$0	$0		$0
2034		$0	$0	$0	$0	$0	$0		$0
2035		$0	$0	$0	$0	$0	$0		$0
2036		$0	$0	$0	$0	$0	$0		$0
2037		$0	$0	$0	$0	$0	$0		$0
2038		$0	$0	$0	$0	$0	$0		$0
2039		$0	$0	$0	$0	$0	$0		$0
2040		$0	$0	$0	$0	$0	$0		$0
2041		$0	$0	$0	$0	$0	$0		$0
2042		$0	$0	$0	$0	$0	$0		$0
2043		$0	$0	$0	$0	$0	$0		$0
2044		$0	$0	$0	$0	$0	$0		$0
2045		$0	$0	$0	$0	$0	$0		$0
2046		$0	$0	$0	$0	$0	$0		$0
2047		$0	$0	$0	$0	$0	$0		$0
2048		$0	$0	$0	$0	$0	$0		$0
2049		$0	$0	$0	$0	$0	$0		$0
2050		$0	$0	$0	$0	$0	$0		$0
2051		$0	$0	$0	$0	$0	$0		$0
2052		$0	$0	$0	$0	$0	$0		$0
2053		$0	$0	$0	$0	$0	$0		$0
2054		$0	$0	$0	$0	$0	$0		$0
2055		$0	$0	$0	$0	$0	$0		$0
2056		$0	$0	$0	$0	$0	$0		$0
2057		$0	$0	$0	$0	$0	$0		$0
2058		$0	$0	$0	$0	$0	$0		$0
2059		$0	$0	$0	$0	$0	$0		$0
2060		$0	$0	$0	$0	$0	$0		$0
								Total Present Value of Discounted Costs (Sum of Column (i))	
Project Life								Transfer to Table 20, Column (c), Exhibit F: Proposal Costs and Benefit Summaries	**$475,660**

Comments: *These devices that will be installed do not require costs to maintain or operate. If a device has faulty equipment, and requires replacement of a part or entire devices and it is not covered by the manufacturer's warranty, then the reciever of the device will pay for the replacement costs. The high-efficiency toilets and urinals are expected to have a functioning lifetime of 20 years or more; the Weather-Based Irrigation Controller is expected to have a functioning lifetime of 10 years; the showerheas and aerators have an expected functioning lifetime of 2 years; and the compact florescent light bulbs have an expected functioning lifetime of 10 years. These are estimates that are used and will vary depending on how much use each device will have.*

Table 7.M.2 - Annual Water Supply Benefits (2009 dollars)

Project: Water and Energy Efficiency in the School and Hotel/Motel Sectors

(a) Year	*(b) Type of Benefit: Avoided cost of imported water (C) Measure of Benefit [Unit]: Acre-feet*					*(b) Type of Benefit: (C) Measure of Benefit [Unit]:*					*Discounting Calculations for Economic Benefits*		
	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(d) Without Project	(e) With Project	(f) Change Resulting from Project [e - d]	(g) Unit $ Value	(h) Annual $ Value [f x g]	(h) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009			0.0		$0			0		$0	**$0**	**1.000**	**$0**
2010			0.0		$0			0		$0	**$0**	**0.943**	**$0**
2011			0.0		$0			0		$0	**$0**	**0.890**	**$0**
2012	-82.0	0.0	82.0	$760	$62,320			0		$0	**$62,320**	**0.840**	**$52,349**
2013	-82.0	0.0	82.0	$793	$65,026			0		$0	**$65,026**	**0.792**	**$51,501**
2014	-82.0	0.0	82.0	$826	$67,732			0		$0	**$67,732**	**0.747**	**$50,596**
2015	-82.0	0.0	82.0	$856	$70,192			0		$0	**$70,192**	**0.705**	**$49,485**
2016	-82.0	0.0	82.0	$887	$72,734			0		$0	**$72,734**	**0.665**	**$48,368**
2017	-82.0	0.0	82.0	$919	$75,358			0		$0	**$75,358**	**0.627**	**$47,249**
2018	-82.0	0.0	82.0	$952	$78,064			0		$0	**$78,064**	**0.592**	**$46,214**
2019	-82.0	0.0	82.0	$987	$80,934			0		$0	**$80,934**	**0.558**	**$45,161**
2020	-82.0	0.0	82.0	$1,023	$83,886			0		$0	**$83,886**	**0.527**	**$44,208**
2021	-82.0	0.0	82.0	$1,032	$84,624			0		$0	**$84,624**	**0.497**	**$42,058**
2022	-82.0	0.0	82.0	$1,043	$85,526			0		$0	**$85,526**	**0.469**	**$40,112**
2023	-82.0	0.0	82.0	$1,053	$86,346			0		$0	**$86,346**	**0.442**	**$38,165**
2024	-82.0	0.0	82.0	$1,063	$87,166			0		$0	**$87,166**	**0.417**	**$36,348**
2025	-82.0	0.0	82.0	$1,073	$87,986			0		$0	**$87,986**	**0.390**	**$34,315**
2026	-82.0	0.0	82.0	$1,084	$88,888			0		$0	**$88,888**	**0.371**	**$32,977**
2027	-82.0	0.0	82.0	$1,095	$89,790			0		$0	**$89,790**	**0.350**	**$31,427**
2028	-82.0	0.0	82.0	$1,105	$90,610			0		$0	**$90,610**	**0.331**	**$29,992**
2029	-82.0	0.0	82.0	$1,116	$91,512			0		$0	**$91,512**	**0.312**	**$28,552**
2030	-82.0	0.0	82.0	$1,127	$92,414			0		$0	**$92,414**	**0.294**	**$27,170**
2031	-79.3	0.0	79.3	$1,138	$90,205			0		$0	**$90,205**	**0.278**	**$25,077**
2032	-76.5	0.0	76.5	$1,149	$87,937			0		$0	**$87,937**	**0.262**	**$23,039**
2033	-73.8	0.0	73.8	$1,161	$85,682			0		$0	**$85,682**	**0.247**	**$21,163**
2034	-71.1	0.0	71.1	$1,172	$83,290			0		$0	**$83,290**	**0.233**	**$19,407**
2035	-68.3	0.0	68.3	$1,184	$80,907			0		$0	**$80,907**	**0.220**	**$17,799**
2036	-65.6	0.0	65.6	$1,195	$78,392			0		$0	**$78,392**	**0.207**	**$16,227**
2037	-62.9	0.0	62.9	$1,207	$75,880			0		$0	**$75,880**	**0.196**	**$14,872**
2038	-60.1	0.0	60.1	$1,219	$73,303			0		$0	**$73,303**	**0.185**	**$13,561**
2039	-57.4	0.0	57.4	$1,231	$70,659			0		$0	**$70,659**	**0.174**	**$12,295**
2040	-54.7	0.0	54.7	$1,243	$67,951			0		$0	**$67,951**	**0.164**	**$11,144**
2041	-51.9	0.0	51.9	$1,255	$65,176			0		$0	**$65,176**	**0.155**	**$10,102**
2042	-49.2	0.0	49.2	$1,267	$62,336			0		$0	**$62,336**	**0.146**	**$9,101**
2043	-46.5	0.0	46.5	$1,280	$59,477			0		$0	**$59,477**	**0.138**	**$8,208**
2044	-43.7	0.0	43.7	$1,292	$56,503			0		$0	**$56,503**	**0.130**	**$7,345**
2045	-41.0	0.0	41.0	$1,305	$53,505			0		$0	**$53,505**	**0.123**	**$6,581**
2046	-38.3	0.0	38.3	$1,318	$50,435			0		$0	**$50,435**	**0.116**	**$5,851**
2047	-35.5	0.0	35.5	$1,330	$47,259			0		$0	**$47,259**	**0.109**	**$5,151**
2048	-32.8	0.0	32.8	$1,344	$44,083			0		$0	**$44,083**	**0.103**	**$4,541**
2049	-30.1	0.0	30.1	$1,357	$40,800			0		$0	**$40,800**	**0.097**	**$3,958**
2050	-27.3	0.0	27.3	$1,370	$37,447			0		$0	**$37,447**	**0.092**	**$3,445**
2051	-24.6	0.0	24.6	$1,383	$34,022			0		$0	**$34,022**	**0.087**	**$2,960**
2052	-21.9	0.0	21.9	$1,397	$30,548			0		$0	**$30,548**	**0.082**	**$2,505**
2053	-19.1	0.0	19.1	$1,411	$26,997			0		$0	**$26,997**	**0.077**	**$2,079**
2054	-16.4	0.0	16.4	$1,424	$23,354			0		$0	**$23,354**	**0.073**	**$1,705**
2055	-13.7	0.0	13.7	$1,439	$19,666			0		$0	**$19,666**	**0.069**	**$1,357**
2056	-10.9	0.0	10.9	$1,452	$15,875			0		$0	**$15,875**	**0.065**	**$1,032**
2057	-8.2	0.0	8.2	$1,467	$12,029			0		$0	**$12,029**	**0.061**	**$734**
2058	-5.5	0.0	5.5	$1,481	$8,096			0		$0	**$8,096**	**0.058**	**$470**
2059	-2.7	0.0	2.7	$1,496	$4,089			0		$0	**$4,089**	**0.054**	**$222**
2060	0.0	0.0	0.0	$1,510	$0			0		$0	**$0**	**0.051**	**$0**

Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):	$1,028,177
Project Allocation:	100.0%
Total Present Value of Discounted Benefits (Monetized Benefits):	**$1,028,177**

Narrative description of benefits: *This project will conserve an estimated 82 acre-feet per year. This total is based on the estimated savings per device. Assumes proportional decline in water supply benefits annually after 2030. Assume treated Tier 1 water is used currently.*

Narrative description of benefits:

Comments:

Table 7.M.3 - Annual Costs of Avoided Projects (2009 dollars)

Project: Water and Energy Efficient in the School and Hotel/Motel Sectors

(a) Year	*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Alternative (Avoided Project Name):* *Avoided Project Description:*				*Discounting Calculations for Economic Benefits*		
	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(b) Avoided Capital Costs	(e) Avoided Replacement Costs	(d) Avoided O&M Costs	(e) Total Avoided Costs [b + c + d]	(e) Total Avoided Costs for All Alts ($)	(f) Discount Value	(g) Discounted Benefits [e x f]
2009				$0				$0				$0	**$0**	**1.000**	**$0**
2010				$0				$0				$0	**$0**	**0.943**	**$0**
2011				$0				$0				$0	**$0**	**0.890**	**$0**
2012				$0				$0				$0	**$0**	**0.840**	**$0**
2013				$0				$0				$0	**$0**	**0.792**	**$0**
2014				$0				$0				$0	**$0**	**0.747**	**$0**
2015				$0				$0				$0	**$0**	**0.705**	**$0**
2016				$0				$0				$0	**$0**	**0.665**	**$0**
2017				$0				$0				$0	**$0**	**0.627**	**$0**
2018				$0				$0				$0	**$0**	**0.592**	**$0**
2019				$0				$0				$0	**$0**	**0.558**	**$0**
2020				$0				$0				$0	**$0**	**0.527**	**$0**
2021				$0				$0				$0	**$0**	**0.497**	**$0**
2022				$0				$0				$0	**$0**	**0.469**	**$0**
2023				$0				$0				$0	**$0**	**0.442**	**$0**
2024				$0				$0				$0	**$0**	**0.417**	**$0**
2025				$0				$0				$0	**$0**	**0.390**	**$0**
2026				$0				$0				$0	**$0**	**0.371**	**$0**
2027				$0				$0				$0	**$0**	**0.350**	**$0**
2028				$0				$0				$0	**$0**	**0.331**	**$0**
2029				$0				$0				$0	**$0**	**0.312**	**$0**
2030				$0				$0				$0	**$0**	**0.294**	**$0**
2031				$0				$0				$0	**$0**	**0.278**	**$0**
2032				$0				$0				$0	**$0**	**0.262**	**$0**
2033				$0				$0				$0	**$0**	**0.247**	**$0**
2034				$0				$0				$0	**$0**	**0.233**	**$0**
2035				$0				$0				$0	**$0**	**0.220**	**$0**
2036				$0				$0				$0	**$0**	**0.207**	**$0**
2037				$0				$0				$0	**$0**	**0.196**	**$0**
2038				$0				$0				$0	**$0**	**0.185**	**$0**
2039				$0				$0				$0	**$0**	**0.174**	**$0**
2040				$0				$0				$0	**$0**	**0.164**	**$0**
2041				$0				$0				$0	**$0**	**0.155**	**$0**
2042				$0				$0				$0	**$0**	**0.146**	**$0**
2043				$0				$0				$0	**$0**	**0.138**	**$0**
2044				$0				$0				$0	**$0**	**0.130**	**$0**
2045				$0				$0				$0	**$0**	**0.123**	**$0**
2046				$0				$0				$0	**$0**	**0.116**	**$0**
2047				$0				$0				$0	**$0**	**0.109**	**$0**
2048				$0				$0				$0	**$0**	**0.103**	**$0**
2049				$0				$0				$0	**$0**	**0.097**	**$0**
2050				$0				$0				$0	**$0**	**0.092**	**$0**
2051				$0				$0				$0	**$0**	**0.087**	**$0**
2052				$0				$0				$0	**$0**	**0.082**	**$0**
2053				$0				$0				$0	**$0**	**0.077**	**$0**
2054				$0				$0				$0	**$0**	**0.073**	**$0**
2055				$0				$0				$0	**$0**	**0.069**	**$0**
2056				$0				$0				$0	**$0**	**0.065**	**$0**
2057				$0				$0				$0	**$0**	**0.061**	**$0**
2058				$0				$0				$0	**$0**	**0.058**	**$0**
2059				$0				$0				$0	**$0**	**0.054**	**$0**
2060				$0				$0				$0	**$0**	**0.051**	**$0**
													Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
													Project Allocation:		100.0%
													Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Table 7.M.4 - Annual Other Water Supply Benefits (2009 dollars)						
Project: Water and Energy Efficient in the School and Hotel/Motel Sectors						
(a) Year	*(b) Type of Benefit:*	*(b) Type of Benefit:*	*(b) Type of Benefit:*	*Discounting Calculations for Economic Benefits*		
	(C) Description of Benefit:	*(C) Description of Benefit:*	*(C) Description of Benefit:*			
	(d) Annual Benefit ($)	(d) Annual Benefit ($)	(d) Annual Benefit ($)	(d) Total Annual Benefits ($)	(i) Discount Value	(j) Discounted Benefits [h x i]
2009	$0	$0	$0	**$0**	**1.000**	**$0**
2010	$0	$0	$0	**$0**	**0.943**	**$0**
2011	$0	$0	$0	**$0**	**0.890**	**$0**
2012	$0	$0	$0	**$0**	**0.840**	**$0**
2013	$0	$0	$0	**$0**	**0.792**	**$0**
2014	$0	$0	$0	**$0**	**0.747**	**$0**
2015	$0	$0	$0	**$0**	**0.705**	**$0**
2016	$0	$0	$0	**$0**	**0.665**	**$0**
2017	$0	$0	$0	**$0**	**0.627**	**$0**
2018	$0	$0	$0	**$0**	**0.592**	**$0**
2019	$0	$0	$0	**$0**	**0.558**	**$0**
2020	$0	$0	$0	**$0**	**0.527**	**$0**
2021	$0	$0	$0	**$0**	**0.497**	**$0**
2022	$0	$0	$0	**$0**	**0.469**	**$0**
2023	$0	$0	$0	**$0**	**0.442**	**$0**
2024	$0	$0	$0	**$0**	**0.417**	**$0**
2025	$0	$0	$0	**$0**	**0.390**	**$0**
2026	$0	$0	$0	**$0**	**0.371**	**$0**
2027	$0	$0	$0	**$0**	**0.350**	**$0**
2028	$0	$0	$0	**$0**	**0.331**	**$0**
2029	$0	$0	$0	**$0**	**0.312**	**$0**
2030	$0	$0	$0	**$0**	**0.294**	**$0**
2031	$0	$0	$0	**$0**	**0.278**	**$0**
2032	$0	$0	$0	**$0**	**0.262**	**$0**
2033	$0	$0	$0	**$0**	**0.247**	**$0**
2034	$0	$0	$0	**$0**	**0.233**	**$0**
2035	$0	$0	$0	**$0**	**0.220**	**$0**
2036	$0	$0	$0	**$0**	**0.207**	**$0**
2037	$0	$0	$0	**$0**	**0.196**	**$0**
2038	$0	$0	$0	**$0**	**0.185**	**$0**
2039	$0	$0	$0	**$0**	**0.174**	**$0**
2040	$0	$0	$0	**$0**	**0.164**	**$0**
2041	$0	$0	$0	**$0**	**0.155**	**$0**
2042	$0	$0	$0	**$0**	**0.146**	**$0**
2043	$0	$0	$0	**$0**	**0.138**	**$0**
2044	$0	$0	$0	**$0**	**0.130**	**$0**
2045	$0	$0	$0	**$0**	**0.123**	**$0**
2046	$0	$0	$0	**$0**	**0.116**	**$0**
2047	$0	$0	$0	**$0**	**0.109**	**$0**
2048	$0	$0	$0	**$0**	**0.103**	**$0**
2049	$0	$0	$0	**$0**	**0.097**	**$0**
2050	$0	$0	$0	**$0**	**0.092**	**$0**
2051	$0	$0	$0	**$0**	**0.087**	**$0**
2052	$0	$0	$0	**$0**	**0.082**	**$0**
2053	$0	$0	$0	**$0**	**0.077**	**$0**
2054	$0	$0	$0	**$0**	**0.073**	**$0**
2055	$0	$0	$0	**$0**	**0.069**	**$0**
2056	$0	$0	$0	**$0**	**0.065**	**$0**
2057	$0	$0	$0	**$0**	**0.061**	**$0**
2058	$0	$0	$0	**$0**	**0.058**	**$0**
2059	$0	$0	$0	**$0**	**0.054**	**$0**
2060	$0	$0	$0	**$0**	**0.051**	**$0**
				Total Present Value of Discounted Benefits over Project Life (Monetized Benefits):		$0
				Project Allocation:		100.0%
				Total Present Value of Discounted Benefits (Monetized Benefits):		**$0**

Table 7.M.5 - Total Water Supply Benefits (2009 dollars) Project: Water and Energy Efficient in the School and Hotel/Motel Sectors			
(a) Total Discounted Water Supply Benefits	**(b) Total Discounted Avoided Project Costs**	**(c) Other Discounted Water Supply Benefits**	**(d) Total Value of Discounted Benefits [a + c] or [b + c]**
$1,028,177	$0	$0	**$1,028,177**
Comments:			

APPENDIX N

Estimating the Future Avoided Import Water Supply Costs of Developing Local Supplies in the Great Los Angeles County Region

Appendix 7-N:

Estimating the Future Avoided Import Water Supply Costs of Developing Local Supplies in the Great Los Angeles County Region

Introduction

Increased water produced locally within the Metropolitan Water District of Southern California (MWD) service area through conservation, recycling, groundwater recharge, groundwater extraction, and other sources will reduce the demand for imported water by the Los Angeles Region. MWD member agencies will substitute locally produced water supplies for imported water from MWD, assuming the locally produced water is less expensive than imported water. The value of adding new local supplies to satisfy local demand in place of imported water can thus be estimated based on the avoided cost of purchasing imported water.

The cost savings arising from reducing demands for imported water should be estimated based on the projected future cost of imports, at the margin. This in turn requires a projection of the cost of providing additional imported water at the levels needed in the future if local resources are not expanded in accordance with the Greater Los Angeles County Region IRWM Implementation Grant Proposal. The key empirical question for valuation is thus, "What is the future cost, at the margin, of acquiring another acre-foot (AF) of imported water, and having it delivered (and treated, where applicable) to the users of the local supply alternatives?"[1]

There are several empirical and conceptual challenges to forecasting the future avoided cost of import water. This Appendix discusses these issues and how they were addressed to develop the avoided water supply costs that are used to evaluate the benefits of those projects that provide local water (or conserve water) in the Los Angeles region.

MWD Wholesale Water Supplies and Current Prices

Water Supply

The Metropolitan Water District of Southern California (MWD) is the major municipal and industrial water wholesaler in the southern California region. With 26 member agencies serving

[1] Cost of treatment and delivery need to be included in the avoided import water costs, to provide a suitable "apples-to-apples" comparison of import water costs to the local supplies. This is because the costs used in these analyses for local supplies are generally inclusive of treatment and delivery.

approximately 19 million people 6,023 acre feet of water each day, MWD projects it will sell 1.75 million AF during 2010-2011.[2]

MWD sources water from a combination of local and imported sources. Imported sources include water diverted from the Colorado River via the Colorado River Aqueduct, from the San Francisco Bay Delta region via the State Water Project (SWP) and from the Owens Valley/Mono Basin via the Los Angeles Aqueduct (LAA). Imported water accounted for approximately 55 percent of the MWD's water supply between 2006 and 2008, of which approximately 93 percent was sourced from the Colorado River Aqueduct (50 percent) and SWP (43 percent).[3] Local sources, which include recycled water, surface water and ground water, fed largely by the San Gabriel, Santa Ana, and Los Angeles River systems, accounted for the remaining 45 percent of the MWD's water supply between 2006 and 2008. Groundwater sources make up the vast majority, or approximately 90 percent, of natural local water supplies. Recycled water and recovered groundwater are the MWD's fastest growing new sources of local water; between 2005 and 2009, the use of recycled water nearly doubled, and groundwater recovery increased from approximately 70 thousand AFY to nearly 100 thousand AFY.

Current Water Rates

MWD sells both untreated and treated water to its member agencies. As the name suggests, untreated water is raw and has not been processed to meet minimum standards acceptable for human consumption.[4] Treated water has been treated and meets federal drinking water standards.[5] Treated water is more expensive than untreated water because of the additional inputs required for its production. The current treated water surcharge for MWD (effective January 1, 2011) is $ 217per AF. Treatment costs have increased to that level from $82 per AF in calendar year 2003.[6]

MWD has established a two-tier rate structure intended to provide both assurances of needed supplies and encouragement for the local development of water resources by member agencies. Tier 1 water rates reflect the cost MWD incurs to maintain a consistent and reliable water supply for its customers. Tier 2 water rates reflect the costs MWD incurs to develop additional water supplies to meet customer demand, which are set higher than Tier 1 rates in order to encourage efficient use of local supplies. MWD also utilizes discounted rate for surplus

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[2] Metropolitan Water District of Southern California, "The District at a Glance", Available at: http://www.mwdh2o.com/mwdh2o/pages/news/at_a_glance/mwd.pdf, [Accessed December 2010].

[3] Metropolitan Water District of Southern California, 2010, Regional Urban Water Management Plan, at pp. A. 2-1 - A. 2-6, Available at: http://www.mwdh2o.com/mwdh2o/pages/yourwater/RUWMP/RUWMP_2010.pdf, [Accessed December 2010].

[4] Untreated water is sometimes referred to as non-potable water.

[5] Treated water is sometimes referred to as potable water.

[6] Metropolitan Water District of Southern California Website, "Water Rates and Charges", Available at: http://www.mwdh2o.com/mwdh2o/pages/finance/finance_02.html, [Accessed December 2010].

water supplies from within the MWD system that can be used to replenishing local supply sources.

Both treated and untreated full service Tiered volumetric water rates are function of volumetric charges ($ per AF) relating to maintaining, pumping, and delivering water to member agencies. For Tier 1 MWD water, these price components are $101, $154, and $119 per AF respectively, effective January 1, 2011. Additional volumetric charges for full service Tier 1 MWD water include a Delta surcharge ($69 per AF) reflecting pumping restrictions on the State Water Project, and a stewardship charge ($41 per AG) reflecting maintenance and development of local water supplies. These price components total $484 per AF as the full service volumetric charge for untreated Tier 1 MWD water effective January 1, 2011. After adding the treatment surcharge of $217, the full service volumetric charge for treated Tier 1 MWD water is $701 per AF. Untreated and treated replenishment water rates are computed as discounts off of the tiered water rates.

In addition to the variable charges described above, MWD water rates include fixed charges. Fixed charges are those which are primarily invariant with water volume and include, across all MWD water sources, system capacity and readiness-to serve charges. Readiness-to-Serve (RTS) charges are fixed charges associated with the portion of the MWD supply system maintained on as needed basis, while the Capacity charge recovers the cost of delivering water within the MWD system at peak usage periods. Effective January 1, 2011, the MWD RTS charge will total $114 million while the Capacity charge will total approximately $10 per AF.[7]

Projected Future Water Rates

Many factors affecting supply and demand for MWD water have caused wide differences between projected and actual water rates over the last several years. Court decisions beginning in 2007 severely impacted Sacramento-San Joaquin Delta exports and reduced dramatically the availability of SWP water to MWD. Concurrently, court decisions and several years of drought have reduced the availability of Colorado River water, historically also a major source of MWD water. These factors have affected the available supply of MWD at all price levels. Additional factors affecting the supply side include changes in the costs of productive inputs such as labor, power, and chemicals for water treatment. Factors affecting the demand for MWD water include conservation efforts, efficient technologies, and the availability of substitute water supply sources, among others.

[7] $7,200 per ft^3/s, where $1ft^3/s$. = 724.4473 AF/Year.

Drought, legal rulings, and basic supply and demand will continue to have important, but at present unknown, impacts on water availability and prices in the future, making both short-term and long-term projections subject to errors characteristic of the forecasting process.

Table 7.N.1 compares Tier 1 water rate projections published by MWD for 2005-2009 with actual water rates to illustrate differences in forecasted and actual water rates. As Table 7.N.2 shows, the margin of error associated with the forecast increases with period of time for which rates are forecast. This analysis requires MWD water rates be forecast through 2060 to match the length of time over which benefits of reduced demand for imported water accrue.

Table 7.N.1: Comparison of Projected and Actual MWD Tier 1 Water Rates

Year	Projected		Actual		Difference[a]	
	Untreated	Treated	Untreated	Treated	Untreated	Treated
2005	$331	$443	$331	$443	0.0%	0.0%
2006	$335	$460	$331	$453	-1.2%	-1.5%
2007	$345	$476	$331	$478	-3.9%	0.4%
2008	$361	$497	$351	$508	-2.6%	2.3%
2009	$379	$523	$436	$620	15.0%	18.7%

Source: Metropolitan Water District of Southern California, 2004, "2004/2005 Long Range Finance Plan", Available at: http://www.mwdh2o.com/mwdh2o/pages/finance/Finance_Plan.pdf. Metropolitan Water District of Southern California Website, "Water Rates and Charges", Available at: http://www.mwdh2o.com/mwdh2o/pages/finance/finance_02.html

Notes: All dollar values are nominal. Projected Tier 1 MWD water rates are sourced with 2004/05 Long Range Finance Plan, whereas actual MWD Tier 1 water rates are sourced with "Water Rates and Charges" available at the MWD website. Projected MWD Tier 1 water rates are computed as the midpoint of the low and high projected rates.

[a] (Actual - Projected) ÷ Projected

The appropriate unit price for valuing avoided costs of imported water purchases depends upon the type of local supply developed, and in turn, the type of water that would have been used in its place under the no project alternative. It was assumed that increases in water produced locally within the Los Angeles region through conservation, desalination, surface water improvements, water reclamation, and groundwater recharge will replace purchases of MWD water at the full service Tier 1 rate. Application of the treated or untreated full service Tier 1

rate depends on the specifics of each local water supply project.[8] Projects improving or creating local replenishment sources are assumed to replace purchases of MWD water at the untreated replenishment water rate.

MWD full service treated and untreated Tier 1 and untreated replenishment water rates are projected beginning with calendar year 2011. Actual MWD full service Tier 1 and replenishment water rates effective January 1, 2009, September 1, 2009 and January 1, 2010 are used for 2009-2010.[9] Water rates published by MWD as effective January 1, 2011 and January 1, 2012 are used for 2011-2012. Rates projected for 2013-2060 are based on projected year-over-year percentage changes in MWD water rates as reported at the July 2010 MWD Member Agency Manager Meeting on the Long Range Finance Plan. A 6% year-over-year percentage change is used to forecast MWD rates for 2013-2020, while a 3% annual change is used to forecast MWD rates for 2021-2060.[10] These annual percentage changes are nominal percentage changes, because they include the effect of inflation on water rates, and projected MWD full service Tier 1 and untreated replenishment water rates are nominal as a result.

The resulting nominal MWD water rates projected for each year 2009–2060 are deflated to real 2009 dollar values using the Consumer Price Index (all items) for All Urban Consumers (CPI-U) in the Los Angeles-Riverside County-Orange County Metropolitan Statistical Area, for which the actual value was used for 2009 and projected values were used for 2010-2060.[11] Annual nominal water rates were deflated to 2009 dollar values by the following formula:

$$\text{Real Water Rate}_t = \text{Nominal Water Rate}_t \div (\text{CPI-U}_t \div \text{CPI-U}_{2009})$$

Table 7.N.2 reports the projected real MWD full service Tier 1 and untreated replenishment water rates used to measure the avoided cost of imported water purchase in this analysis. Annual year-over-year percentage changes in the real water rates are also reported in the final three columns of Table 7.N.2.

[8] To the extent future water use under the no project alternative is supplied by local Tier 2 water rather than imported Tier 1 water, the total value of avoided water import costs presented in this analysis will be understated by the price differential between full service Tier 2 and Tier 1 MWD rates.

[9] Calendar year 2009 water rates were computed as the weighted average of rates effective January-August and September-December.

[10] These percentages are used to forecast untreated and treated Tier 1 and untreated replenishment rates.

[11] For the 2009, the actual value of the CPI-U for the Los Angeles area was utilized. Values for 2010-2020 were projected based on Congressional Budget Office projections for annual changes in the national CPI-U for 2010-2020. In other words, the CPI-U in Los Angeles was assumed to change at the same rate as the CPI-U for the entire nation. For 2021-2060, CPI-U values for the Los Angeles were projected at the average annual percentage change in the national CPI-U for 2012-2014 (1.7%) and 2015-2020 (2.3%).

Table 7.N.2: Projected MWD Real Treated and Untreated Water Rates, 2009-2060

**All prices are reported in constant 2009 dollars.*

Year	*Projected Real MWD Water Rates ($/AF)*			*% Change in Projected Real MWD Water Rates*		
	Tier 1		Replenishment	Tier 1		Replenishment
	Treated	Untreated	Untreated	Treated	Untreated	Untreated
2009	$620	$436	$318			
2010	$690	$476	$360	11.29%	9.17%	13.21%
2011	$726	$513	$399	5.22%	7.77%	10.83%
2012	$760	$537	$423	4.68%	4.68%	6.02%
2013	$793	$560	$442	4.34%	4.28%	4.49%
2014	$826	$583	$460	4.16%	4.11%	4.07%
2015	$856	$604	$477	3.63%	3.60%	3.70%
2016	$887	$626	$494	3.62%	3.64%	3.56%
2017	$919	$649	$512	3.61%	3.67%	3.64%
2018	$952	$672	$530	3.59%	3.54%	3.52%
2019	$987	$697	$550	3.68%	3.72%	3.77%
2020	$1,023	$722	$569	3.65%	3.59%	3.45%
2021	$1,032	$729	$575	0.88%	0.97%	1.05%
2022	$1,043	$736	$581	1.07%	0.96%	1.04%
2023	$1,053	$743	$586	0.96%	0.95%	0.86%
2024	$1,063	$751	$592	0.95%	1.08%	1.02%
2025	$1,073	$758	$598	0.94%	0.93%	1.01%
2026	$1,084	$765	$604	1.03%	0.92%	1.00%
2027	$1,095	$773	$610	1.01%	1.05%	0.99%
2028	$1,105	$780	$615	0.91%	0.91%	0.82%
2029	$1,116	$788	$621	1.00%	1.03%	0.98%
2030	$1,127	$796	$628	0.99%	1.02%	1.13%
2031	$1,138	$804	$634	0.98%	1.01%	0.96%
2032	$1,149	$811	$640	0.97%	0.87%	0.95%
2033	$1,161	$820	$646	1.04%	1.11%	0.94%
2034	$1,172	$828	$653	0.95%	0.98%	1.08%
2035	$1,184	$836	$659	1.02%	0.97%	0.92%
2036	$1,195	$844	$666	0.93%	0.96%	1.06%
2037	$1,207	$852	$672	1.00%	0.95%	0.90%
2038	$1,219	$860	$679	0.99%	0.94%	1.04%
2039	$1,231	$869	$685	0.98%	1.05%	0.88%
2040	$1,243	$878	$692	0.97%	1.04%	1.02%
2041	$1,255	$886	$699	0.97%	0.91%	1.01%
2042	$1,267	$894	$706	0.96%	0.90%	1.00%
2043	$1,280	$903	$713	1.03%	1.01%	0.99%
2044	$1,292	$912	$720	0.94%	1.00%	0.98%
2045	$1,305	$921	$726	1.01%	0.99%	0.83%

**All prices are reported in constant 2009 dollars.*

Year	*Projected Real MWD Water Rates ($/AF)*			*% Change in Projected Real MWD Water Rates*		
	Tier 1		Replenishment	Tier 1		Replenishment
	Treated	Untreated	Untreated	Treated	Untreated	Untreated
2046	$1,318	$930	$734	1.00%	0.98%	1.10%
2047	$1,330	$939	$741	0.91%	0.97%	0.95%
2048	$1,344	$949	$748	1.05%	1.06%	0.94%
2049	$1,357	$958	$756	0.97%	0.95%	1.07%
2050	$1,370	$967	$763	0.96%	0.94%	0.93%
2051	$1,383	$977	$770	0.95%	1.03%	0.92%
2052	$1,397	$986	$778	1.01%	0.92%	1.04%
2053	$1,411	$996	$786	1.00%	1.01%	1.03%
2054	$1,424	$1,006	$793	0.92%	1.00%	0.89%
2055	$1,439	$1,016	$801	1.05%	0.99%	1.01%
2056	$1,452	$1,025	$809	0.90%	0.89%	1.00%
2057	$1,467	$1,036	$817	1.03%	1.07%	0.99%
2058	$1,481	$1,046	$825	0.95%	0.97%	0.98%
2059	$1,496	$1,056	$833	1.01%	0.96%	0.97%
2060	$1,510	$1,066	$841	0.94%	0.95%	0.96%

Source:

Metropolitan Water District of Southern California Website, "Water Rates and Charges", Available at: http://www.mwdh2o.com/mwdh2o/pages/finance/finance_02.html. Metropolitan Water District of Southern California, 2004, "2004/2005 Long Range Finance Plan", Available at: http://www.mwdh2o.com/mwdh2o/pages/finance/Finance_Plan.pdf.

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